Light Attenuation in the Experimental Lakes Area- 1981 Data

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by

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TABLE OF CONTENTS

	Page
ABSTRACT/RESUME	iv
INTRODUCTION	1
DATA COLLECTION AND ANALYSIS	1
REFERENCES	1

LIST OF APPENDICES

Appendix		Page
1	This appendix lists data for vertical light attenuation profiles taken in 1981 at ELA	3
2	In this appendix, the measured irradiances (as percentages of surface irradiance) are plotted against depth (in meters)	24

ABSTRACT

Shearer, J. A., and E. R. DeBruyn. 1982. Light attenuation in the Experimental Lakes Area - 1981 data. Can. Data Rep. Fish. Aquat. Sci. 337: iv + 51 p.

Depth profiles of photosynthetically active radiation were measured periodically in twelve lake basins at the Experimental Lakes Area during 1981. These data are tabulated and plots of irradiance versus depth are provided. Mean attenuation coefficients have been calculated from the data.

Key words: light penetration; water transparency; limnological data.

RESUME

Shearer, J. A., and E. R. DeBruyn. 1982. Light attenuation in the Experimental Lakes Area - 1981 data. Can. Data Rep. Fish. Aquat. Sci. 337: iv + 51 p.

Nous avons mesuré périodiquement, au cours de l'année 1981, les profils de profondeur de la radiation photosynthétique dans treize bassins de lacs situées dans la Région des Lacs Expérimentaux. Nous avons établi des tables de ces données et nous avons figuré graphiquement les émissions de radiations face à la profondeur. A partir de ces données, nous avons calculé les coefficients moyens d,atténuation.

Mots-clés: pénétration de la lumière; transparence de l'eau; données limnologiques.

INTRODUCTION

This report presents irradiance versus depth data collected during 1981 for selected basins within the Experimental Lakes Area (ELA), northwestern Ontario (Johnson and Vallentyne 1971). These data were collected in conjunction with algal productivity studies (DeBruyn et al. 1982). The recorded irradiances can be defined as measures of photosynthetically active radiation (PAR) and represent the quantum flux density in the 400-700 nm waveband.

The content and format of this report are similar to those found in previous volumes of this annual series (Shearer 1976; Shearer and DeClercq 1976, 1977, 1978, 1979, 1980; Shearer and DeBruyn 1981). A brief description of methodology is provided and the attenuation data are presented both in tables and in graphs.

DATA COLLECTION AND ANALYSIS

The vertical attenuation of PAR was monitored in twelve ELA basins during the ice-free season of 1981. These basins are 114, 222, 223, 224, 226NE, 226SW, 227, 239, 302N, 302S, 661 and 979.

Lakes 114 and 223 were undergoing controlled acidification with H_2SO_4 (Schindler et al. 1980). Lake 227 was in its thirteenth year of artificial enrichment with nitrogen and phosphorus while 226NE and 226SW were in their first recovery year following eight years of nutrient additions (Schindler et al. 1971; Schindler 1975).

The separate basins of Lakes 226 and 302 are maintained by reinforced plastic "sea curtains".

The surveyed basins range in surface area from 1 to 56 hectares and in maximum depth from <1 to 30 meters.

Attenuation profiles were normally taken at two-week intervals in each basin (weather permitting). The two shallow bog lakes, 661 and 979, were each profiled on only two occasions.

Profiling equipment and techniques were unchanged from those described in the previous report (Shearer and DeBruyn 1981). A Licor LI-192S cosine response underwater quantum sensor was used in conjunction with an LI-185 meter. Whenever possible, profiles were taken near mid-morning or mid-afternoon (Combs 1977) and under clear or uniformly overcast skies.

Surface readings were taken in air and corrected for the sensor immersion effect. Each of these corrected values serves as the surface reference (100%) to which all underwater percentages for that profile refer. Whenever surface values fluctuated during the profiling activity, an LI-190S sensor was used as a deck cell and underwater readings were subsequently corrected for fluctuations in the deck value.

The profiles included in this report are presented in two forms. Appendix 1 lists the measured values of irradiance versus depth. The underwater irradiance values have been converted to percentages of the coincident surface irradiance. Appendix 2 presents plots of these data along with fitted curves calculated from the data. In both appendices the data are grouped by lake basin and listed chronologically.

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APPENDIX 1

This appendix lists the data for vertical attenuation profiles taken at the ELA during 1981.

All times are local, i.e. Central Daylight (CDT) from 26 April through 24 October, Central Standard (CST) before and after that period.

Each attenuation coefficient is the negative slope of a regression of the natural logarithm of the percent surface irradiance on depth. R**2 (or r^2) is a measure of the linearity of the above regression, wherein 1.00 would represent perfect linearity.

The depths are in meters. Irradiance values are actual, rather than fitted, and are given as percentages of the surface value (corrected for surface effect).

LAKE 114

DATE: 1 MAY TIME: 1055 HOURS
ATTENUATION COEFFICIENT: .64 R**2: .9769

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	64.05	1.00	37.84	2.00	19.14	3.00	11.93
4.00	7.44								

DATE: 17 MAY TIME: 1715 HOURS
ATTENUATION COEFFICIENT: .67 R**2: .9970

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	72.39	1.00	49.29	2.00	23.10	3.00	12.78
4.00	7.09								

DATE: 1 JUN TIME: 1030 HOURS
ATTENUATION COEFFICIENT: .60 R**2: .9836

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	68.52	1.00	43.25	2.00	22.54	3.00	14.01
4.00	8.95								

DATE: 19 JUN TIME: 1055 HOURS
ATTENUATION COEFFICIENT: .73 R**2: .9986

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	62.79	1.00	42.88	2.00	21.06	3.00	10.34
4.00	5.13								

DATE: 29 JUN TIME: 1100 HOURS
ATTENUATION COEFFICIENT: .99 R**2: .9963

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	59.19	1.00	33.17	2.00	14.18	3.00	5.85
4.00	1.70								

DATE: 13 JUL TIME: 1030 HOURS
ATTENUATION COEFFICIENT: 1.16 R**2: .9600

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	47.99	1.00	23.54	2.00	10.59	3.00	5.43
4.00	.59								

DATE: 27 JUL TIME: 0925 HOURS
ATTENUATION COEFFICIENT: .93 R**2: .9880

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	45.62	1.00	25.66	2.00	10.83	3.00	4.63
4.00	2.11								

DATE: 10 AUG TIME: 0930 HOURS
ATTENUATION COEFFICIENT: 1.03 R**2: .9787

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	38.41	1.00	19.03	2.00	7.33	3.00	3.13
4.00	1.34								

DATE: 24 AUG TIME: 0930 HOURS
ATTENUATION COEFFICIENT: .88 R**2: .9918

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	57.43	1.00	30.68	2.00	12.66	3.00	6.23
4.00	2.75								

DATE: 8 SEP TIME: 0930 HOURS
ATTENUATION COEFFICIENT: .85 R**2: .9924

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	52.89	1.00	29.97	2.00	12.41	3.00	5.57
4.00	2.79	5.00	1.25						

LAKE 114

DATE: 21 SEP
ATTENUATION COEFFICIENT: .69
TIME: 0840 HOURS
R**2: .9871

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	63.17	1.00	35.41	2.00	16.85	3.00	9.42
4.00	5.34	5.00	2.91						

DATE: 5 OCT
ATTENUATION COEFFICIENT: .71
TIME: 0840 HOURS
R**2: .9945

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	62.42	1.00	38.08	2.00	18.34	3.00	9.80
4.00	5.22	5.00	2.64						

LAKE 222

DATE: 1 MAY
ATTENUATION COEFFICIENT: 1.54
TIME: 0920 HOURS
R**2: .9824

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	36.69	1.00	18.35	2.00	4.79	3.00	1.40
4.00	.36	5.00	.02						

DATE: 12 MAY
ATTENUATION COEFFICIENT: 1.23
TIME: 0920 HOURS
R**2: .9965

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	43.46	1.00	23.92	2.00	7.87	3.00	2.57
4.00	.79	5.00	.16						

DATE: 27 MAY
ATTENUATION COEFFICIENT: 1.16
TIME: 0925 HOURS
R**2: .9891

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	47.86	1.00	27.35	2.00	9.57	3.00	3.97
4.00	1.23	5.00	.21						

DATE: 19 JUN
ATTENUATION COEFFICIENT: 1.11
TIME: 0930 HOURS
R**2: .9978

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	46.90	1.00	26.80	2.00	9.78	3.00	3.78
4.00	1.05	5.00	.34						

DATE: 9 JUL
ATTENUATION COEFFICIENT: 1.25
TIME: 0945 HOURS
R**2: .9959

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	41.95	1.00	19.81	2.00	5.83	3.00	1.57
4.00	.56	5.00	.17						

DATE: 22 JUL
ATTENUATION COEFFICIENT: 1.28
TIME: 0910 HOURS
R**2: .9942

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	38.29	1.00	18.43	2.00	4.68	3.00	1.53
4.00	.57	5.00	.12						

DATE: 4 AUG
ATTENUATION COEFFICIENT: 1.33
TIME: 0940 HOURS
R**2: .9921

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	39.49	1.00	19.75	2.00	6.14	3.00	1.90
4.00	.59	5.00	.08						

DATE: 27 AUG
ATTENUATION COEFFICIENT: 1.33
TIME: 1525 HOURS
R**2: .9585

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	51.35	1.00	27.55	2.00	9.27	3.00	3.63
4.00	1.19	5.00	.07						

DATE: 25 SEP
ATTENUATION COEFFICIENT: 1.41
TIME: 1000 HOURS
R**2: .9954

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	34.92	1.00	15.48	2.00	3.64	3.00	1.09
4.00	.82	5.00	.07						

LAKE 223

DATE: 1 MAY
ATTENUATION COEFFICIENT: .42

TIME: 0845 HOURS
R**2: .9969

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	68.84	1.00	50.48	2.00	31.21	3.00	19.82
4.00	13.95	5.00	8.81	6.00	5.60	7.00	3.91	8.00	2.61
9.00	1.82	10.00	1.22	11.00	.84	12.00	.57	13.00	.37

DATE: 12 MAY
ATTENUATION COEFFICIENT: .38

TIME: 0820 HOURS
R**2: .9970

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	76.21	1.00	61.98	2.00	34.67	3.00	28.14
4.00	19.43	5.00	13.15	6.00	9.35	7.00	6.37	8.00	4.59
9.00	3.35	10.00	2.18	11.00	1.47	12.00	.92	13.00	.54

DATE: 27 MAY
ATTENUATION COEFFICIENT: .36

TIME: 0825 HOURS
R**2: .9534

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	78.32	1.00	66.06	2.00	50.96	3.00	40.77
4.00	30.76	5.00	25.10	6.00	19.44	7.00	14.34	8.00	9.53
9.00	6.45	10.00	4.40	11.00	2.45	12.00	1.15	13.00	.47

DATE: 8 JUN
ATTENUATION COEFFICIENT: .34

TIME: 0840 HOURS
R**2: .8869

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	73.35	1.00	56.42	2.00	44.78	3.00	38.79
4.00	33.15	5.00	27.86	6.00	22.22	7.00	17.63	8.00	13.61
9.00	9.87	10.00	6.35	11.00	3.53	12.00	1.28	13.00	.35

DATE: 19 JUN
ATTENUATION COEFFICIENT: .38

TIME: 0900 HOURS
R**2: .9548

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	80.99	1.00	63.32	2.00	47.12	3.00	33.87
4.00	24.00	5.00	17.96	6.00	13.69	7.00	10.16	8.00	7.14
9.00	5.08	10.00	3.40	11.00	1.59	12.00	.43		

DATE: 1 JUL
ATTENUATION COEFFICIENT: .43

TIME: 1610 HOURS
R**2: .9260

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	78.70	1.00	65.94	2.00	47.86	3.00	34.03
4.00	24.99	5.00	18.61	6.00	13.51	7.00	9.78	8.00	6.70
9.00	4.36	10.00	2.61	11.00	.83	12.00	.19		

DATE: 21 JUL
ATTENUATION COEFFICIENT: .47

TIME: 0825 HOURS
R**2: .9265

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	77.38	1.00	60.39	2.00	41.52	3.00	29.25
4.00	20.38	5.00	15.29	6.00	10.47	7.00	7.36	8.00	5.25
9.00	3.47	10.00	1.85	11.00	.48	12.00	.11		

DATE: 4 AUG
ATTENUATION COEFFICIENT: .42

TIME: 0815 HOURS
R**2: .9472

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	71.96	1.00	59.56	2.00	38.96	3.00	28.04
4.00	21.22	5.00	15.63	6.00	10.79	7.00	7.94	8.00	5.66
9.00	3.45	10.00	1.59	11.00	.38				

DATE: 14 AUG
ATTENUATION COEFFICIENT: .45

TIME: 1030 HOURS
R**2: .9157

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	79.23	1.00	66.42	2.00	48.36	3.00	34.37
4.00	26.45	5.00	19.11	6.00	14.22	7.00	10.25	8.00	6.99
9.00	4.14	10.00	2.02	11.00	.69	12.00	.14		

LAKE 223

DATE: 27 AUG TIME: 1435 HOURS
ATTENUATION COEFFICIENT: .49 R**2: .9068

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	84.52	1.00	69.58	2.00	45.35	3.00	32.78
4.00	22.99	5.00	16.70	6.00	12.37	7.00	9.24	8.00	6.18
9.00	3.40	10.00	1.69	11.00	.47	12.00	.08		

DATE: 11 SEP TIME: 1025 HOURS
ATTENUATION COEFFICIENT: .52 R**2: .9286

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	75.38	1.00	61.14	2.00	37.86	3.00	25.63
4.00	17.76	5.00	12.31	6.00	8.54	7.00	6.03	8.00	4.32
9.00	2.50	10.00	1.11	11.00	.31	12.00	.06		

DATE: 25 SEP TIME: 0930 HOURS
ATTENUATION COEFFICIENT: .56 R**2: .9569

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	62.75	1.00	45.73	2.00	26.80	3.00	16.59
4.00	10.21	5.00	6.59	6.00	4.30	7.00	2.59	8.00	1.73
9.00	1.14	10.00	.70	11.00	.20	12.00	.03		

DATE: 12 OCT TIME: 0915 HOURS
ATTENUATION COEFFICIENT: .50 R**2: .9945

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	57.95	1.00	39.75	2.00	23.35	3.00	13.12
4.00	7.95	5.00	4.82	6.00	3.00	7.00	1.99	8.00	1.31
9.00	.77	10.00	.48	11.00	.29	12.00	.21		

LAKE 224

DATE: 1 MAY
ATTENUATION COEFFICIENT: .28
TIME: 0820 HOURS
R**2: .9973

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	72.63	1.00	61.37	2.00	40.92	3.00	30.07
4.00	22.50	5.00	17.18	6.00	13.09	7.00	10.23	8.00	7.61
9.00	5.77	10.00	4.36	11.00	3.21	12.00	2.39	13.00	1.85
14.00	1.63	15.00	1.05	16.00	.81	17.00	.63	18.00	.50
19.00	.40								

DATE: 12 MAY
ATTENUATION COEFFICIENT: .28
TIME: 0855 HOURS
R**2: .9996

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	81.19	1.00	66.21	2.00	49.66	3.00	38.62
4.00	28.85	5.00	21.91	6.00	16.87	7.00	11.87	8.00	9.98
9.00	7.09	10.00	5.27	11.00	4.08	12.00	3.09	13.00	2.33
14.00	1.77	15.00	1.33	16.00	1.00	17.00	.75	18.00	.54
19.00	.42								

DATE: 27 MAY
ATTENUATION COEFFICIENT: .28
TIME: 0855 HOURS
R**2: .9995

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	80.70	1.00	67.00	2.00	47.97	3.00	37.76
4.00	29.24	5.00	21.93	6.00	15.84	7.00	13.02	8.00	10.05
9.00	7.64	10.00	5.77	11.00	4.36	12.00	3.32	13.00	2.51
14.00	1.86	15.00	1.41	16.00	1.06	17.00	.79	18.00	.61
19.00	.45								

DATE: 19 JUN
ATTENUATION COEFFICIENT: .27
TIME: 0840 HOURS
R**2: .9982

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	80.24	1.00	62.59	2.00	47.34	3.00	36.91
4.00	26.80	5.00	20.70	6.00	16.37	7.00	13.48	8.00	10.19
9.00	7.62	10.00	6.18	11.00	4.75	12.00	3.67	13.00	2.84
14.00	2.17	15.00	1.67	16.00	1.26	17.00	.92	18.00	.66
19.00	.47								

DATE: 1 JUL
ATTENUATION COEFFICIENT: .25
TIME: 1540 HOURS
R**2: .9979

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	85.76	1.00	73.09	2.00	52.63	3.00	42.88
4.00	34.11	5.00	26.80	6.00	20.27	7.00	17.35	8.00	13.84
9.00	10.72	10.00	8.67	11.00	6.72	12.00	5.36	13.00	4.29
14.00	3.31	15.00	2.55	16.00	1.93	17.00	1.43	18.00	1.04
19.00	.76								

DATE: 21 JUL
ATTENUATION COEFFICIENT: .27
TIME: 0900 HOURS
R**2: .9979

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	76.15	1.00	65.90	2.00	51.26	3.00	36.61
4.00	28.56	5.00	23.43	6.00	19.04	7.00	14.21	8.00	11.13
9.00	8.79	10.00	6.81	11.00	5.13	12.00	3.85	13.00	2.86
14.00	2.18	15.00	1.64	16.00	1.22	17.00	.93	18.00	.67
19.00	.45								

DATE: 4 AUG
ATTENUATION COEFFICIENT: .26
TIME: 0850 HOURS
R**2: .9946

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	74.66	1.00	64.13	2.00	53.60	3.00	42.69
4.00	33.88	5.00	27.18	6.00	21.44	7.00	17.99	8.00	14.64
9.00	11.29	10.00	8.23	11.00	6.13	12.00	4.63	13.00	3.43
14.00	2.57	15.00	1.93	16.00	1.43	17.00	1.05	18.00	.76
19.00	.53								

LAKE 224

DATE: 14 AUG
ATTENUATION COEFFICIENT: .26
TIME: 1050 HOURS
R**2: .9913

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	85.38	1.00	75.89	2.00	61.66	3.00	48.03
4.00	39.13	5.00	32.61	6.00	26.33	7.00	21.70	8.00	17.19
9.00	13.87	10.00	10.55	11.00	7.89	12.00	5.75	13.00	4.33
14.00	3.27	15.00	2.43	16.00	1.79	17.00	1.28	18.00	.90
19.00	.62								

DATE: 27 AUG
ATTENUATION COEFFICIENT: .26
TIME: 1500 HOURS
R**2: .9912

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	83.89	1.00	71.90	2.00	54.47	3.00	46.30
4.00	38.67	5.00	31.59	6.00	23.64	7.00	19.17	8.00	16.34
9.00	13.29	10.00	10.13	11.00	7.68	12.00	5.67	13.00	4.19
14.00	3.07	15.00	2.28	16.00	1.71	17.00	1.21	18.00	.87
19.00	.58								

DATE: 11 SEP
ATTENUATION COEFFICIENT: .27
TIME: 1045 HOURS
R**2: .9931

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	84.23	1.00	68.91	2.00	52.07	3.00	39.82
4.00	30.63	5.00	26.03	6.00	20.67	7.00	16.54	8.00	13.25
9.00	11.10	10.00	8.65	11.00	6.51	12.00	4.78	13.00	3.55
14.00	2.56	15.00	1.85	16.00	1.36	17.00	.98	18.00	.70
19.00	.47								

DATE: 25 SEP
ATTENUATION COEFFICIENT: .28
TIME: 0910 HOURS
R**2: .9903

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	69.39	1.00	55.04	2.00	40.68	3.00	30.39
4.00	23.21	5.00	18.90	6.00	14.72	7.00	11.49	8.00	9.33
9.00	7.54	10.00	6.22	11.00	4.98	12.00	3.71	13.00	2.61
14.00	1.90	15.00	1.36	16.00	.95	17.00	.68	18.00	.44
19.00	.28								

DATE: 12 OCT
ATTENUATION COEFFICIENT: .23
TIME: 1005 HOURS
R**2: .9891

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	67.87	1.00	50.47	2.00	42.64	3.00	36.89
4.00	30.11	5.00	24.36	6.00	19.49	7.00	15.49	8.00	13.23
9.00	10.44	10.00	8.58	11.00	6.94	12.00	5.60	13.00	4.56
14.00	3.67	15.00	2.82	16.00	2.05	17.00	1.46	18.00	1.01
19.00	.66								

LAKE 226 NE

DATE: 1 MAY
ATTENUATION COEFFICIENT: .72
TIME: 1000 HOURS
R**2: .9996

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	66.67	1.00	42.49	2.00	22.88	3.00	11.77
4.00	5.56	5.00	2.59	6.00	1.24	7.00	.60	8.00	.30
9.00	.15								

DATE: 12 MAY
ATTENUATION COEFFICIENT: .58
TIME: 1100 HOURS
R**2: .9976

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	71.75	1.00	52.76	2.00	31.65	3.00	18.78
4.00	11.29	5.00	6.38	6.00	3.48	7.00	1.88	8.00	.97
9.00	.48								

DATE: 27 MAY
ATTENUATION COEFFICIENT: .61
TIME: 1055 HOURS
R**2: .9959

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	61.10	1.00	43.95	2.00	25.01	3.00	14.65
4.00	8.86	5.00	5.04	6.00	2.66	7.00	1.38	8.00	.65
9.00	.30								

DATE: 4 JUN
ATTENUATION COEFFICIENT: .66
TIME: 1050 HOURS
R**2: .9933

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	73.90	1.00	56.65	2.00	31.53	3.00	19.71
4.00	11.73	5.00	6.06	6.00	2.79	7.00	1.32	8.00	.59
9.00	.27	10.00	.15						

DATE: 19 JUN
ATTENUATION COEFFICIENT: .65
TIME: 1020 HOURS
R**2: .9798

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	72.23	1.00	52.34	2.00	30.36	3.00	17.80
4.00	10.89	5.00	7.07	6.00	3.82	7.00	1.38	8.00	.54
9.00	.21								

DATE: 1 JUL
ATTENUATION COEFFICIENT: .63
TIME: 1105 HOURS
R**2: .9868

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	68.18	1.00	51.72	2.00	30.09	3.00	17.87
4.00	9.40	5.00	5.41	6.00	3.24	7.00	1.79	8.00	.65
9.00	.22								

DATE: 21 JUL
ATTENUATION COEFFICIENT: .69
TIME: 1020 HOURS
R**2: .9957

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	67.00	1.00	46.21	2.00	23.33	3.00	12.01
4.00	6.24	5.00	3.19	6.00	1.76	7.00	.96	8.00	.45
9.00	.14								

DATE: 29 JUL
ATTENUATION COEFFICIENT: .70
TIME: 0830 HOURS
R**2: .9938

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	61.62	1.00	42.06	2.00	20.34	3.00	10.27
4.00	5.13	5.00	2.60	6.00	1.46	7.00	.81	8.00	.42
9.00	.11								

DATE: 14 AUG
ATTENUATION COEFFICIENT: .68
TIME: 1135 HOURS
R**2: .9920

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	65.37	1.00	46.85	2.00	25.06	3.00	14.16
4.00	7.41	5.00	3.70	6.00	2.00	7.00	1.05	8.00	.56
9.00	.14								

LAKE 226 NE

DATE: 28 AUG
ATTENUATION COEFFICIENT: .70
TIME: 0945 HOURS
R**2: .9959

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	58.32	1.00	40.27	2.00	18.05	3.00	9.79
4.00	4.93	5.00	2.57	6.00	1.36	7.00	.76	8.00	.37
9.00	.12								

DATE: 11 SEP
ATTENUATION COEFFICIENT: .68
TIME: 1130 HOURS
R**2: .9993

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	61.10	1.00	43.74	2.00	22.08	3.00	11.39
4.00	5.97	5.00	3.10	6.00	1.56	7.00	.80	8.00	.41
9.00	.18								

DATE: 25 SEP
ATTENUATION COEFFICIENT: .66
TIME: 1045 HOURS
R**2: .9974

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	66.64	1.00	40.13	2.00	21.21	3.00	11.18
4.00	5.88	5.00	3.30	6.00	1.82	7.00	1.01	8.00	.51
9.00	.24	10.00	.10						

DATE: 12 OCT
ATTENUATION COEFFICIENT: .71
TIME: 1125 HOURS
R**2: .9957

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	51.65	1.00	31.82	2.00	15.87	3.00	8.01
4.00	4.19	5.00	2.21	6.00	1.15	7.00	.58	8.00	.25

DATE: 1 MAY
ATTENUATION COEFFICIENT: .69
TIME: 0955 HOURS
R**2: .9995

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	67.00	1.00	46.90	2.00	22.51	3.00	11.66
4.00	5.63	5.00	2.85	6.00	1.45	7.00	.77	8.00	.40
9.00	.21								

DATE: 12 MAY
ATTENUATION COEFFICIENT: .61
TIME: 1040 HOURS
R**2: .9995

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	70.41	1.00	53.37	2.00	30.66	3.00	16.47
4.00	8.97	5.00	4.94	6.00	2.82	7.00	1.43	8.00	.75
9.00	.39								

DATE: 27 MAY
ATTENUATION COEFFICIENT: .60
TIME: 1025 HOURS
R**2: .9982

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	77.18	1.00	53.60	2.00	31.62	3.00	19.08
4.00	11.15	5.00	5.79	6.00	2.93	7.00	1.59	8.00	.84
9.00	.43								

DATE: 4 JUN
ATTENUATION COEFFICIENT: .61
TIME: 1030 HOURS
R**2: .9912

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	75.76	1.00	56.69	2.00	34.02	3.00	21.34
4.00	12.99	5.00	7.19	6.00	3.87	7.00	1.96	8.00	.92
9.00	.43	10.00	.19						

DATE: 19 JUN
ATTENUATION COEFFICIENT: .59
TIME: 1010 HOURS
R**2: .9904

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	71.10	1.00	51.96	2.00	30.08	3.00	19.14
4.00	11.60	5.00	7.00	6.00	3.88	7.00	1.99	8.00	.87
9.00	.37								

DATE: 1 JUL
ATTENUATION COEFFICIENT: .57
TIME: 1055 HOURS
R**2: .9917

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	70.41	1.00	49.06	2.00	29.98	3.00	18.17
4.00	10.72	5.00	7.00	6.00	4.00	7.00	2.12	8.00	.97
9.00	.41								

DATE: 21 JUL
ATTENUATION COEFFICIENT: .70
TIME: 1005 HOURS
R**2: .9987

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	64.73	1.00	42.02	2.00	18.74	3.00	9.99
4.00	4.83	5.00	2.58	6.00	1.39	7.00	.70	8.00	.32
9.00	.16								

DATE: 29 JUL
ATTENUATION COEFFICIENT: .72
TIME: 0845 HOURS
R**2: .9977

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	67.48	1.00	39.91	2.00	18.32	3.00	8.68
4.00	4.53	5.00	2.47	6.00	1.25	7.00	.59	8.00	.28

DATE: 14 AUG
ATTENUATION COEFFICIENT: .66
TIME: 1120 HOURS
R**2: .9977

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	65.90	1.00	45.03	2.00	24.16	3.00	12.41
4.00	6.81	5.00	3.73	6.00	2.12	7.00	1.01	8.00	.48
9.00	.20								

DATE: 27 AUG
ATTENUATION COEFFICIENT: .67
TIME: 1605 HOURS
R**2: .9942

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	61.85	1.00	42.61	2.00	20.89	3.00	11.27
4.00	6.18	5.00	3.56	6.00	2.02	7.00	.98	8.00	.42
9.00	.15								

LAKE 226 SW

DATE: 11 SEP TIME: 1120 HOURS
ATTENUATION COEFFICIENT: .65 R**2: .9981

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	65.19	1.00	45.63	2.00	21.73	3.00	10.72
4.00	5.79	5.00	3.36	6.00	1.87	7.00	1.04	8.00	.49
9.00	.24								

DATE: 25 SEP TIME: 1035 HOURS
ATTENUATION COEFFICIENT: .65 R**2: .9984

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	66.62	1.00	40.88	2.00	21.20	3.00	10.75
4.00	5.83	5.00	3.18	6.00	1.80	7.00	.99	8.00	.47
9.00	.24	10.00	.12						

DATE: 12 OCT TIME: 1115 HOURS
ATTENUATION COEFFICIENT: .69 R**2: .9942

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	51.72	1.00	30.56	2.00	14.69	3.00	8.35
4.00	4.29	5.00	2.27	6.00	1.20	7.00	.62	8.00	.28

LAKE 227

DATE: 21 APR
ATTENUATION COEFFICIENT: 1.17
TIME: 0945 HOURS
R**2: .9956

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	42.84	1.00	21.51	2.00	7.29	3.00	1.99
4.00	.75	5.00	.26						

DATE: 4 MAY
ATTENUATION COEFFICIENT: .98
TIME: 0810 HOURS
R**2: .9969

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	45.58	1.00	25.71	2.00	11.61	3.00	4.56
4.00	1.76	5.00	.65	6.00	.21				

DATE: 18 MAY
ATTENUATION COEFFICIENT: .97
TIME: 0825 HOURS
R**2: .9975

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	50.36	1.00	27.70	2.00	10.34	3.00	4.28
4.00	1.83	5.00	.67	6.00	.24				

DATE: 1 JUN
ATTENUATION COEFFICIENT: 1.09
TIME: 0820 HOURS
R**2: .9951

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	44.79	1.00	23.50	2.00	8.74	3.00	2.90
4.00	.91	5.00	.41						

DATE: 16 JUN
ATTENUATION COEFFICIENT: 1.43
TIME: 0820 HOURS
R**2: .9956

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	42.88	1.00	19.94	2.00	6.00	3.00	1.72
4.00	.24	5.00	.08						

DATE: 29 JUN
ATTENUATION COEFFICIENT: 1.57
TIME: 0835 HOURS
R**2: .9937

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	34.02	1.00	15.98	2.00	4.02	3.00	1.05
4.00	.13								

DATE: 13 JUL
ATTENUATION COEFFICIENT: 1.70
TIME: 0825 HOURS
R**2: .9862

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	37.29	1.00	16.90	2.00	4.47	3.00	.98
4.00	.08								

DATE: 27 JUL
ATTENUATION COEFFICIENT: 1.59
TIME: 0840 HOURS
R**2: .9943

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	33.74	1.00	14.84	2.00	3.78	3.00	.95
4.00	.12								

DATE: 10 AUG
ATTENUATION COEFFICIENT: 1.60
TIME: 0820 HOURS
R**2: .9923

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	31.96	1.00	12.05	2.00	2.43	3.00	.58
4.00	.15								

DATE: 24 AUG
ATTENUATION COEFFICIENT: 1.46
TIME: 0825 HOURS
R**2: .9860

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	36.87	1.00	14.31	2.00	2.91	3.00	.76
4.00	.29								

LAKE 227

DATE: 8 SEP TIME: 0830 HOURS
ATTENUATION COEFFICIENT: 1.71 R**2: .9973

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	39.10	1.00	13.17	2.00	2.41	3.00	.51
4.00	.10								

DATE: 21 SEP TIME: 1105 HOURS
ATTENUATION COEFFICIENT: 1.55 R**2: .9980

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	39.99	1.00	16.81	2.00	3.40	3.00	.83
4.00	.19								

DATE: 5 OCT TIME: 1115 HOURS
ATTENUATION COEFFICIENT: 1.88 R**2: .9989

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	38.79	1.00	14.19	2.00	2.62	3.00	.33

LAKE 239

DATE: 21 APR
ATTENUATION COEFFICIENT: .57
TIME: 1015 HOURS
R**2: .9827

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	50.43	1.00	29.24	2.00	14.01	3.00	7.60
4.00	4.29	5.00	2.56	6.00	1.69	7.00	1.12	8.00	.66
9.00	.38	10.00	.22						

DATE: 1 MAY
ATTENUATION COEFFICIENT: .60
TIME: 1155 HOURS
R**2: .9987

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	66.50	1.00	43.32	2.00	24.48	3.00	13.00
4.00	7.15	5.00	4.03	6.00	2.27	7.00	1.28	8.00	.72
9.00	.42	10.00	.22						

DATE: 17 MAY
ATTENUATION COEFFICIENT: .65
TIME: 1615 HOURS
R**2: .9989

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	65.84	1.00	48.52	2.00	23.10	3.00	12.24
4.00	6.47	5.00	3.58	6.00	1.77	7.00	.92	8.00	.53
9.00	.30								

DATE: 3 JUN
ATTENUATION COEFFICIENT: .61
TIME: 0935 HOURS
R**2: .9994

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	70.79	1.00	46.77	2.00	25.28	3.00	13.91
4.00	7.84	5.00	4.30	6.00	2.34	7.00	1.24	8.00	.66
9.00	.38								

DATE: 16 JUN
ATTENUATION COEFFICIENT: .60
TIME: 1015 HOURS
R**2: .9990

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	65.90	1.00	46.13	2.00	24.16	3.00	13.18
4.00	7.80	5.00	4.28	6.00	2.42	7.00	1.30	8.00	.72
9.00	.40	10.00	.24						

DATE: 29 JUN
ATTENUATION COEFFICIENT: .66
TIME: 1615 HOURS
R**2: .9978

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	62.10	1.00	43.58	2.00	21.24	3.00	10.89
4.00	5.56	5.00	2.75	6.00	1.45	7.00	.83	8.00	.44
9.00	.26								

DATE: 13 JUL
ATTENUATION COEFFICIENT: .74
TIME: 0845 HOURS
R**2: .9909

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	55.98	1.00	27.99	2.00	14.00	3.00	5.67
4.00	2.80	5.00	1.36	6.00	.70	7.00	.38	8.00	.20
9.00	.12								

DATE: 27 JUL
ATTENUATION COEFFICIENT: .69
TIME: 0905 HOURS
R**2: .9943

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	58.79	1.00	35.55	2.00	15.96	3.00	8.01
4.00	3.75	5.00	1.88	6.00	.97	7.00	.55	8.00	.30
9.00	.16	10.00	.10						

DATE: 10 AUG
ATTENUATION COEFFICIENT: .60
TIME: 1110 HOURS
R**2: .9973

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	61.62	1.00	42.06	2.00	21.52	3.00	12.52
4.00	6.55	5.00	3.57	6.00	1.98	7.00	1.15	8.00	.66
9.00	.38	10.00	.23						

LAKE 239

DATE: 26 AUG TIME: 1415 HOURS
ATTENUATION COEFFICIENT: .61 R**2: .9975

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	68.47	1.00	44.99	2.00	23.18	3.00	12.32
4.00	6.50	5.00	3.57	6.00	2.08	7.00	1.23	8.00	.65
9.00	.38								

DATE: 8 SEP TIME: 1710 HOURS
ATTENUATION COEFFICIENT: .73 R**2: .9955

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	59.14	1.00	38.81	2.00	15.53	3.00	7.21
4.00	3.60	5.00	1.83	6.00	.93	7.00	.43	8.00	.24
9.00	.14								

DATE: 21 SEP TIME: 1545 HOURS
ATTENUATION COEFFICIENT: .66 R**2: .9946

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	58.26	1.00	40.78	2.00	17.48	3.00	8.74
4.00	4.81	5.00	2.40	6.00	1.33	7.00	.71	8.00	.41
9.00	.25								

DATE: 7 OCT TIME: 0915 HOURS
ATTENUATION COEFFICIENT: .72 R**2: .9932

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	52.32	1.00	33.44	2.00	14.04	3.00	6.64
4.00	3.16	5.00	1.63	6.00	.86	7.00	.44	8.00	.23
9.00	.14								

DATE: 14 NOV TIME: 1330 HOURS
ATTENUATION COEFFICIENT: .67 R**2: .9932

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	51.05	1.00	31.73	2.00	14.79	3.00	7.70
4.00	4.01	5.00	2.16	6.00	1.19	7.00	.64	8.00	.34
9.00	.20								

LAKE 302 N

DATE: 1 MAY TIME: 1030 HOURS
ATTENUATION COEFFICIENT: .57 R**2: .9968

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	69.39	1.00	51.45	2.00	26.92	3.00	14.60
4.00	7.72	5.00	4.13	6.00	2.37	7.00	1.36	8.00	.83
9.00	.50	10.00	.31	11.00	.19				

DATE: 17 MAY TIME: 1645 HOURS
ATTENUATION COEFFICIENT: .55 R**2: .9981

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	71.74	1.00	52.79	2.00	34.52	3.00	20.57
4.00	12.32	5.00	7.17	6.00	4.20	7.00	2.22	8.00	1.21
9.00	.66	10.00	.37						

DATE: 1 JUN TIME: 0930 HOURS
ATTENUATION COEFFICIENT: .50 R**2: .9873

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	73.47	1.00	53.18	2.00	32.71	3.00	22.57
4.00	15.57	5.00	10.39	6.00	6.47	7.00	3.71	8.00	2.00
9.00	1.00	10.00	.44						

DATE: 16 JUN TIME: 0915 HOURS
ATTENUATION COEFFICIENT: .56 R**2: .9925

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	68.79	1.00	47.86	2.00	28.71	3.00	18.43
4.00	11.61	5.00	6.94	6.00	4.01	7.00	2.39	8.00	1.20
9.00	.62	10.00	.25						

DATE: 29 JUN TIME: 0945 HOURS
ATTENUATION COEFFICIENT: .52 R**2: .9792

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	69.14	1.00	49.18	2.00	34.21	3.00	22.45
4.00	15.25	5.00	9.91	6.00	6.45	7.00	3.71	8.00	2.12
9.00	.84	10.00	.34						

DATE: 13 JUL TIME: 0930 HOURS
ATTENUATION COEFFICIENT: .66 R**2: .9937

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	84.37	1.00	54.59	2.00	28.54	3.00	16.38
4.00	8.69	5.00	5.03	6.00	2.83	7.00	1.48	8.00	.71
9.00	.27	10.00	.11						

DATE: 23 JUL TIME: 0900 HOURS
ATTENUATION COEFFICIENT: .67 R**2: .9883

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	94.02	1.00	65.92	2.00	35.01	3.00	17.72
4.00	9.94	5.00	5.71	6.00	3.29	7.00	1.69	8.00	.78
9.00	.30	10.00	.10						

DATE: 10 AUG TIME: 1010 HOURS
ATTENUATION COEFFICIENT: .65 R**2: .9919

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	73.32	1.00	48.04	2.00	26.29	3.00	15.42
4.00	8.85	5.00	5.06	6.00	2.67	7.00	1.24	8.00	.56
9.00	.20								

DATE: 24 AUG TIME: 1015 HOURS
ATTENUATION COEFFICIENT: .75 R**2: .8115

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	62.11	1.00	44.77	2.00	27.43	3.00	18.44
4.00	12.14	5.00	7.98	6.00	4.73	7.00	2.55	8.00	1.26
9.00	.38	10.00	.00						

LAKE 302 N

DATE: 8 SEP
ATTENUATION COEFFICIENT: .65

TIME: 1025 HOURS
R**2: .9536

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	70.07	1.00	49.17	2.00	28.28	3.00	15.37
4.00	9.34	5.00	5.78	6.00	3.64	7.00	1.99	8.00	1.10
9.00	.42	10.00	.05						

DATE: 21 SEP
ATTENUATION COEFFICIENT: .61

TIME: 0915 HOURS
R**2: .9634

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	59.29	1.00	45.06	2.00	24.43	3.00	14.94
4.00	9.13	5.00	5.41	6.00	3.34	7.00	2.03	8.00	1.17
9.00	.51	10.00	.07						

DATE: 5 OCT
ATTENUATION COEFFICIENT: .57

TIME: 0910 HOURS
R**2: .9915

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	58.26	1.00	38.26	2.00	19.70	3.00	11.22
4.00	6.28	5.00	3.79	6.00	2.36	7.00	1.19	8.00	.72
9.00	.55								

LAKE 302 S

DATE: 1 MAY
ATTENUATION COEFFICIENT: .51
TIME: 1035 HOURS
R**2: .9997

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	74.57	1.00	57.10	2.00	32.63	3.00	20.74
4.00	12.23	5.00	7.52	6.00	4.54	7.00	2.78	8.00	1.68
9.00	1.03								

DATE: 17 MAY
ATTENUATION COEFFICIENT: .58
TIME: 1655 HOURS
R**2: .9928

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	81.93	1.00	61.10	2.00	34.44	3.00	20.83
4.00	13.05	5.00	7.53	6.00	4.17	7.00	2.17	8.00	1.03
9.00	.44								

DATE: 1 JUN
ATTENUATION COEFFICIENT: .57
TIME: 0940 HOURS
R**2: .9560

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	70.53	1.00	50.78	2.00	31.53	3.00	23.10
4.00	16.40	5.00	10.86	6.00	6.07	7.00	2.70	8.00	1.09
9.00	.30								

DATE: 16 JUN
ATTENUATION COEFFICIENT: .63
TIME: 0935 HOURS
R**2: .9605

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	72.15	1.00	61.85	2.00	32.64	3.00	20.84
4.00	13.63	5.00	8.65	6.00	4.87	7.00	2.10	8.00	.72
9.00	.18								

DATE: 29 JUN
ATTENUATION COEFFICIENT: .60
TIME: 1025 HOURS
R**2: .9408

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	65.14	1.00	45.77	2.00	30.30	3.00	21.03
4.00	14.02	5.00	9.40	6.00	5.44	7.00	2.58	8.00	.86
9.00	.17								

DATE: 13 JUL
ATTENUATION COEFFICIENT: .74
TIME: 0920 HOURS
R**2: .8804

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	86.54	1.00	54.44	2.00	32.10	3.00	20.24
4.00	12.56	5.00	7.75	6.00	4.47	7.00	2.02	8.00	.66
9.00	.02								

DATE: 23 JUL
ATTENUATION COEFFICIENT: .93
TIME: 0910 HOURS
R**2: .7536

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	67.77	1.00	50.83	2.00	31.57	3.00	18.02
4.00	11.86	5.00	7.01	6.00	3.77	7.00	1.51	8.00	.46
9.00	.00								

DATE: 10 AUG
ATTENUATION COEFFICIENT: .79
TIME: 1035 HOURS
R**2: .8684

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	71.87	1.00	53.60	2.00	31.67	3.00	18.52
4.00	11.27	5.00	7.13	6.00	3.65	7.00	1.53	8.00	.53
9.00	.01								

DATE: 24 AUG
ATTENUATION COEFFICIENT: .80
TIME: 1030 HOURS
R**2: .7468

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	65.18	1.00	46.65	2.00	29.45	3.00	20.51
4.00	13.73	5.00	9.36	6.00	5.10	7.00	2.51	8.00	.98
9.00	.00								

LAKE 302 S

DATE: 6 SEP TIME: 1035 HOURS
ATTENUATION COEFFICIENT: .76 R**2: .8936

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	67.00	1.00	47.51	2.00	25.22	3.00	14.86
4.00	8.65	5.00	4.87	6.00	2.86	7.00	1.50	8.00	.65
9.00	.02								

DATE: 21 SEP TIME: 0930 HOURS
ATTENUATION COEFFICIENT: .73 R**2: .9251

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	65.44	1.00	44.67	2.00	21.81	3.00	11.84
4.00	6.44	5.00	3.80	6.00	2.26	7.00	1.34	8.00	.66
9.00	.03								

DATE: 5 OCT TIME: 0945 HOURS
ATTENUATION COEFFICIENT: .49 R**2: .9911

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.50	57.78	1.00	40.61	2.00	22.16	3.00	14.36
4.00	8.95	5.00	6.07	6.00	4.00	7.00	2.19	8.00	1.56
9.00	.94								

LAKE 661

DATE: 22 JUN — TIME: 0930 HOURS
ATTENUATION COEFFICIENT: 2.70 — R**2: .9957

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.25	43.27	.50	23.73	.75	12.14	.85	9.77

DATE: 2 SEP — TIME: 1445 HOURS
ATTENUATION COEFFICIENT: 3.15 — R**2: .9971

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.25	48.97	.50	19.59	.75	9.79		

LAKE 979

DATE: 22 JUN — TIME: 1045 HOURS
ATTENUATION COEFFICIENT: 2.61 — R**2: .9367

DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.25	85.29	.50	35.01	.75	15.26		

DATE: 2 SEP — TIME: 1400 HOURS
ATTENUATION COEFFICIENT: 1.09 — R**2: .9645

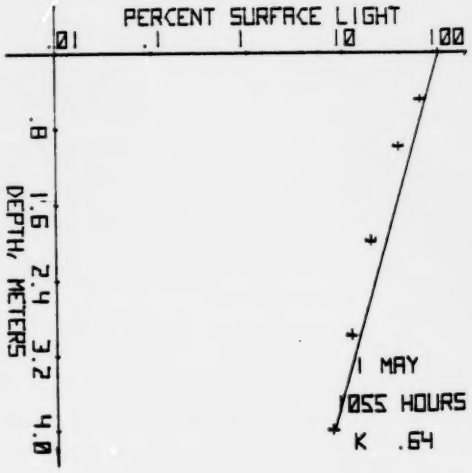
DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.	DEPTH	% SURF.
0.00	100.00	.25	86.45	.50	56.53	.75	46.55		

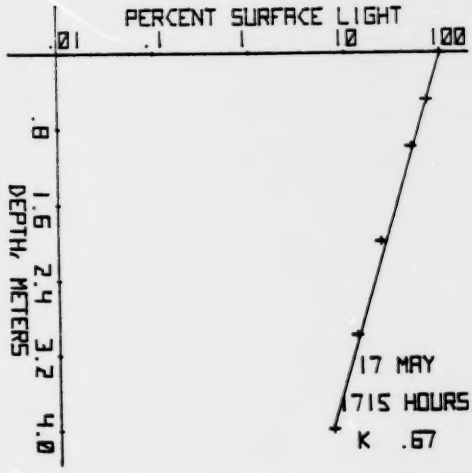
APPENDIX 2

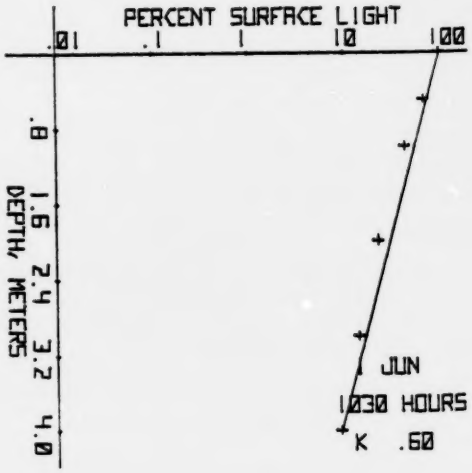
In this appendix, the measured irradiances (as percentages of surface irradiance) are plotted against depth (in meters). Percent light is plotted on a logarithmic scale, depth on a linear scale.

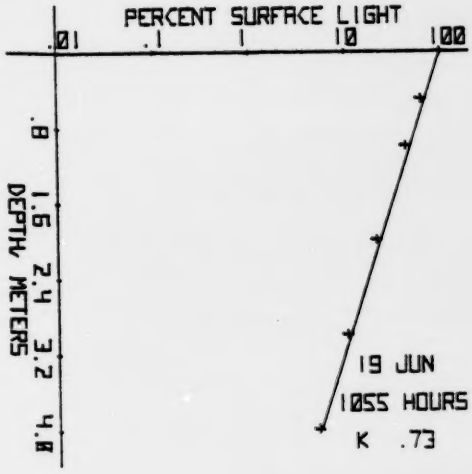
Each attenuation coefficient (K) is the negative slope of a regression of the natural logarithm of the percent surface light on depth. The solid line represents this regression and is an estimate of the percent surface light at depth, based on K. It has been drawn through 100% at 0 depth because this irradiance-depth relationship is fixed by definition.

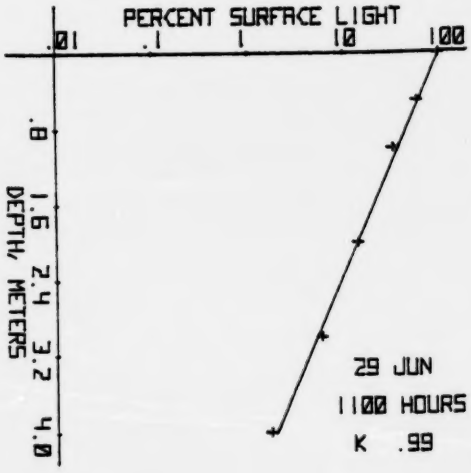
LAKE 114

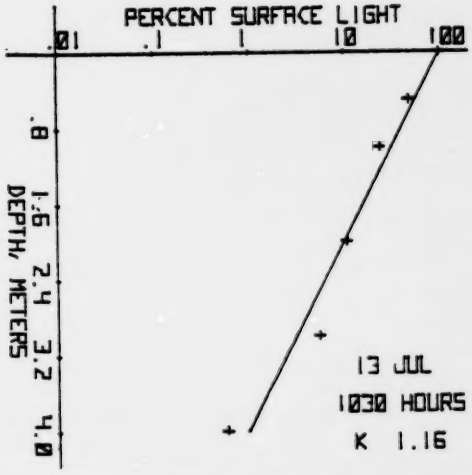

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
.8
1.6
2.4
3.2
4.0
1 MAY
1055 HOURS
K .64


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
.8
1.6
2.4
3.2
4.0
17 MAY
1715 HOURS
K .67

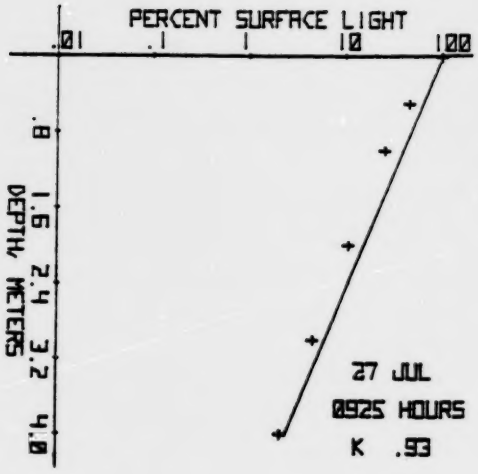

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
.8
1.6
2.4
3.2
4.0
JUN
1030 HOURS
K .60

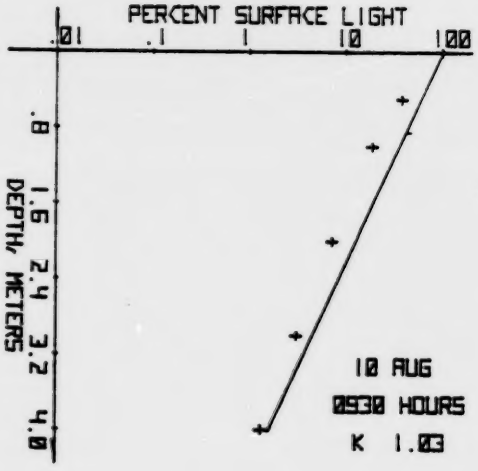

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
.8
1.6
2.4
3.2
4.0
19 JUN
1055 HOURS
K .73

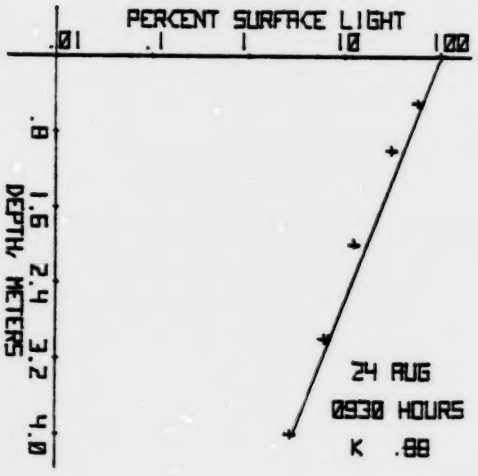

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
.8
1.6
2.4
3.2
4.0
29 JUN
1100 HOURS
K .99

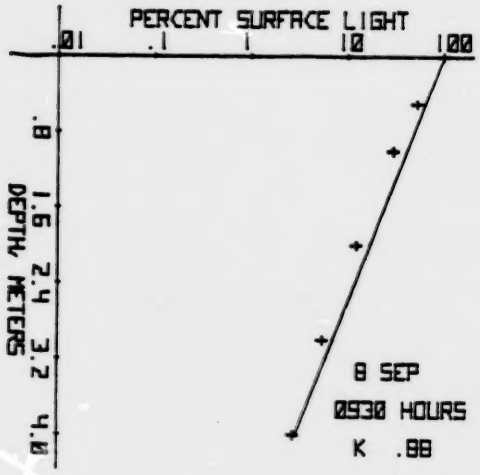

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
.8
1.6
2.4
3.2
4.0
13 JUL
1030 HOURS
K 1.16

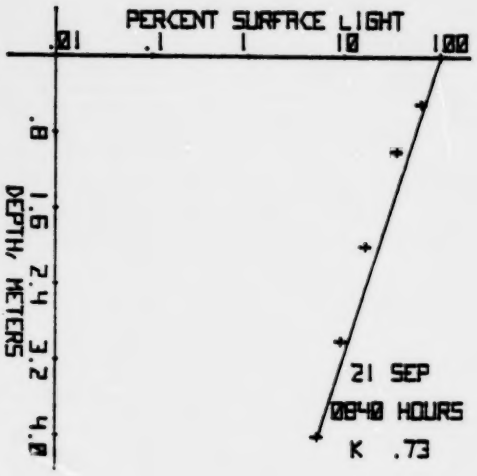
LAKE 114

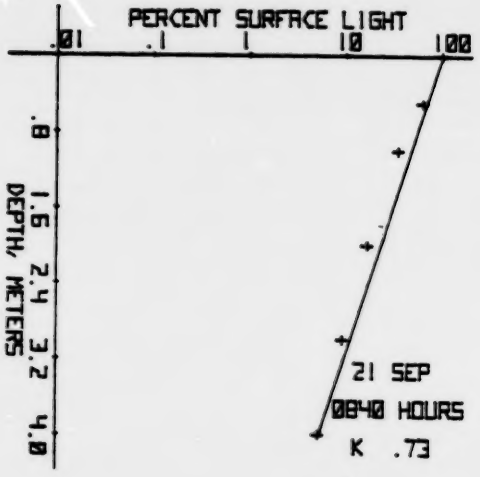

PERCENT SURFACE LIGHT
.01
.1
1
10
100
.8
1.6
2.4
3.2
4.0
DEPTH METERS
27 JUL
0925 HOURS
K .93


PERCENT SURFACE LIGHT
.01
.1
1
10
100
.8
1.6
2.4
3.2
4.0
DEPTH METERS
10 AUG
0930 HOURS
K 1.03

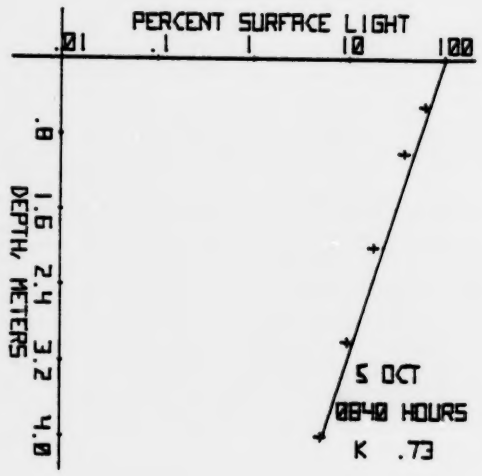

PERCENT SURFACE LIGHT
.01
.1
1
10
100
.8
1.6
2.4
3.2
4.0
DEPTH METERS
24 AUG
0930 HOURS
K .88


PERCENT SURFACE LIGHT
.01
.1
1
10
100
.8
1.6
2.4
3.2
4.0
DEPTH METERS
8 SEP
0930 HOURS
K .88

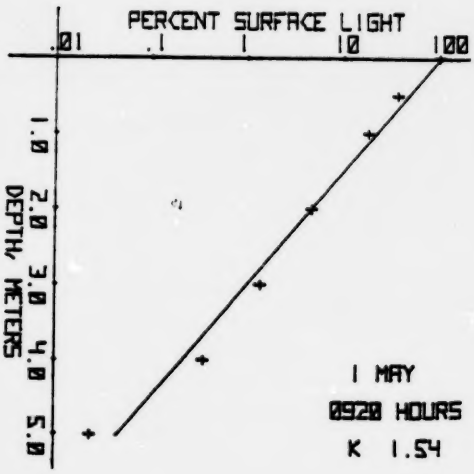

PERCENT SURFACE LIGHT
.01
.1
1
10
100
.8
1.6
2.4
3.2
4.0
DEPTH METERS
21 SEP
0840 HOURS
K .73

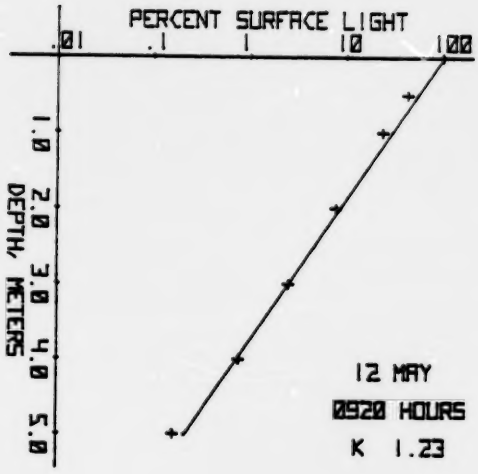

PERCENT SURFACE LIGHT
.01
.1
1
10
100
.8
1.6
2.4
3.2
4.0
DEPTH METERS
21 SEP
0840 HOURS
K .73

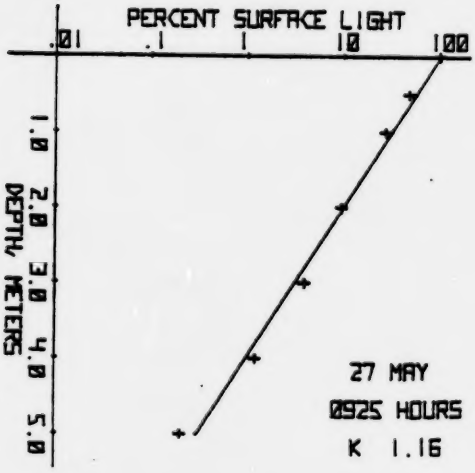
LAKE 114

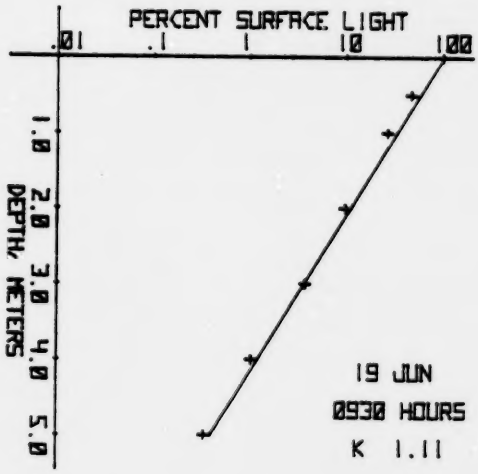

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
0
.4
.8
1.2
1.6
2.0
2.4
3.2
5 OCT
0840 HOURS
K .73

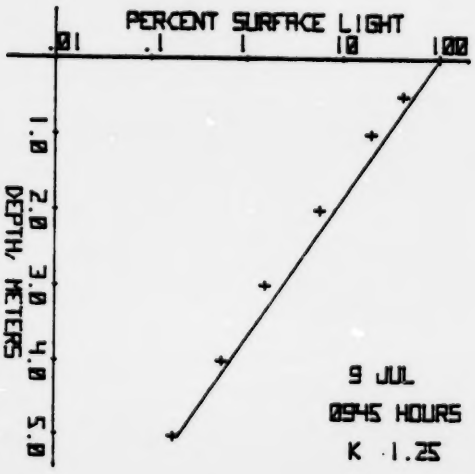
LAKE 222

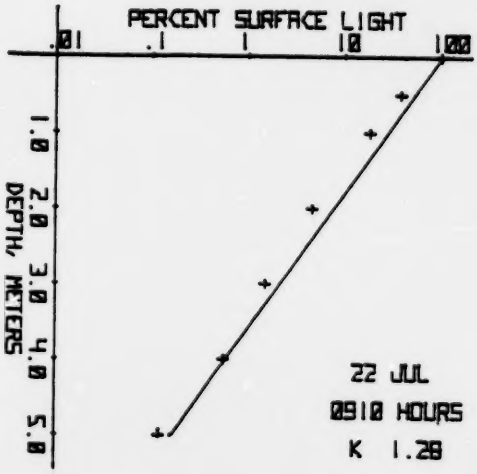

PERCENT SURFACE LIGHT
.01
.1
1
10
100
1.0
2.0
3.0
4.0
5.0
DEPTH, METERS
1 MAY
0920 HOURS
K 1.54


PERCENT SURFACE LIGHT
.01
.1
1
10
100
1.0
2.0
3.0
4.0
5.0
DEPTH, METERS
12 MAY
0920 HOURS
K 1.23

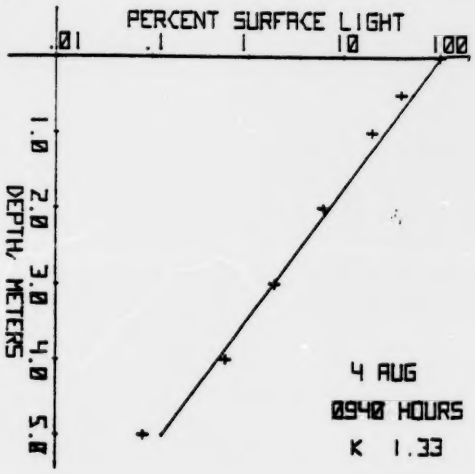

PERCENT SURFACE LIGHT
.01
.1
1
10
100
1.0
2.0
3.0
4.0
5.0
DEPTH, METERS
27 MAY
0925 HOURS
K 1.16

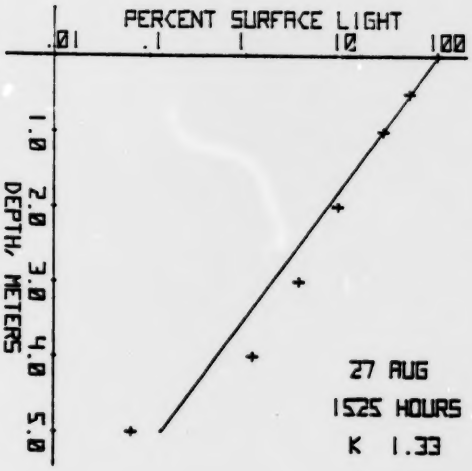

PERCENT SURFACE LIGHT
.01
.1
1
10
100
1.0
2.0
3.0
4.0
5.0
DEPTH, METERS
19 JUN
0930 HOURS
K 1.11

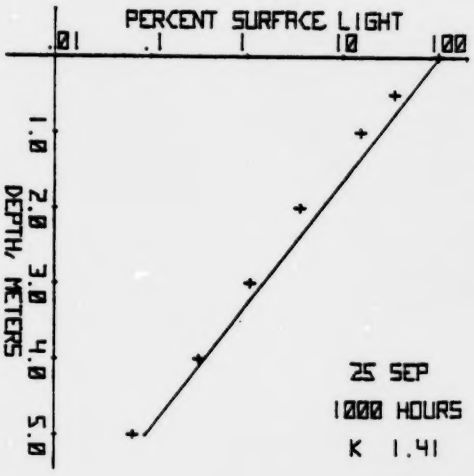

PERCENT SURFACE LIGHT
.01
.1
1
10
100
1.0
2.0
3.0
4.0
5.0
DEPTH, METERS
9 JUL
0945 HOURS
K 1.25


PERCENT SURFACE LIGHT
.01
.1
1
10
100
1.0
2.0
3.0
4.0
5.0
DEPTH, METERS
22 JUL
0910 HOURS
K 1.28

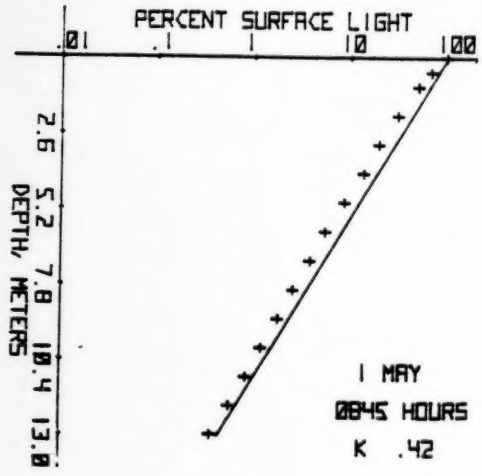
LAKE 222

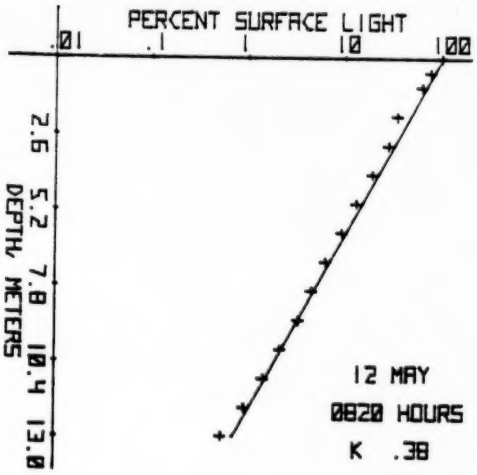

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.1
0.2
0.3
0.4
0.5
4 AUG
0940 HOURS
K 1.33

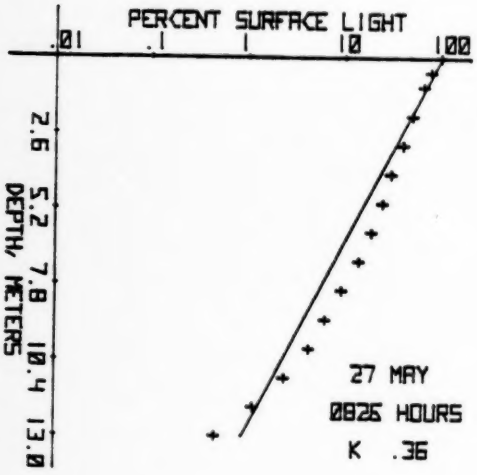

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.1
0.2
0.3
0.4
0.5
27 AUG
1525 HOURS
K 1.33

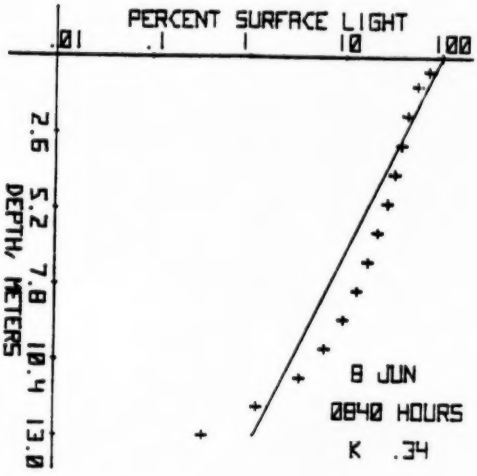

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.1
0.2
0.3
0.4
0.5
25 SEP
1000 HOURS
K 1.41

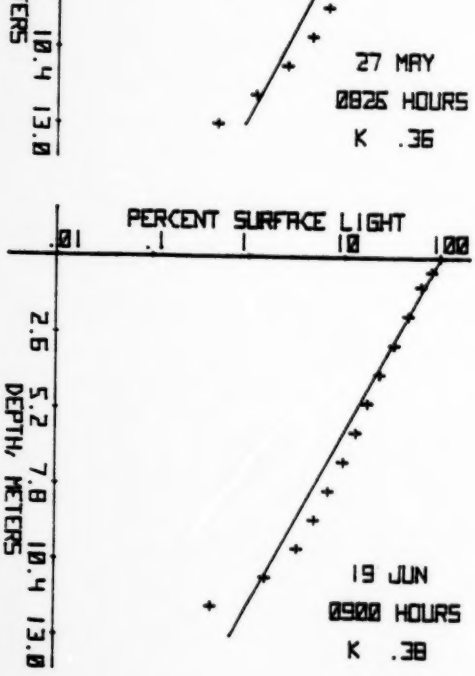
LAKE 223

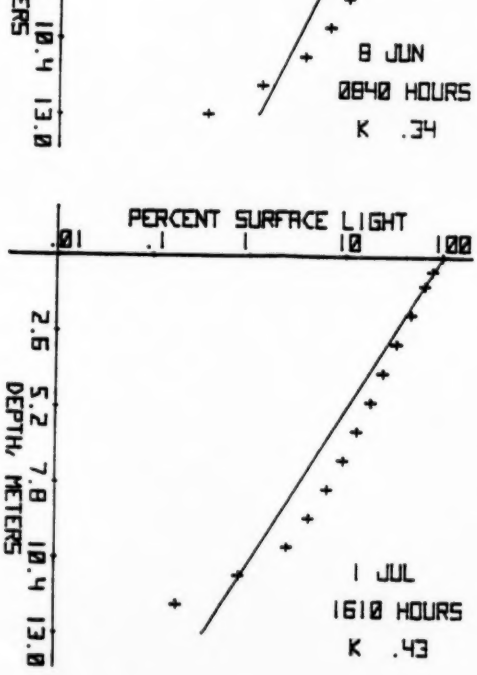

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.6
5.2
7.8
10.4
13.0
DEPTH, METERS
1 MAY
0845 HOURS
K .42


PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.6
5.2
7.8
10.4
13.0
DEPTH, METERS
12 MAY
0820 HOURS
K .38

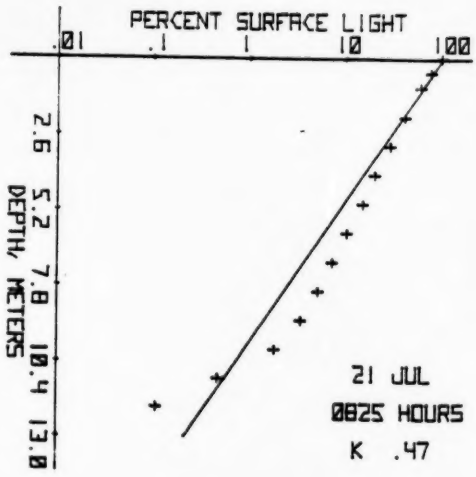

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.6
5.2
7.8
10.4
13.0
DEPTH, METERS
27 MAY
0825 HOURS
K .36

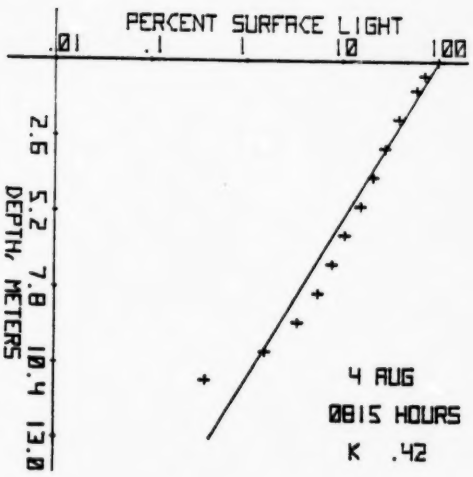

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.6
5.2
7.8
10.4
13.0
DEPTH, METERS
8 JUN
0840 HOURS
K .34

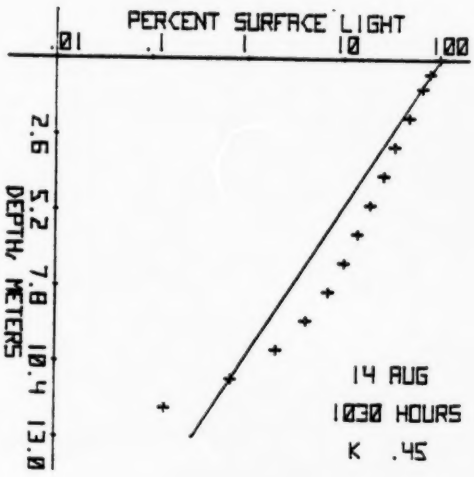

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.6
5.2
7.8
10.4
13.0
DEPTH, METERS
19 JUN
0900 HOURS
K .38

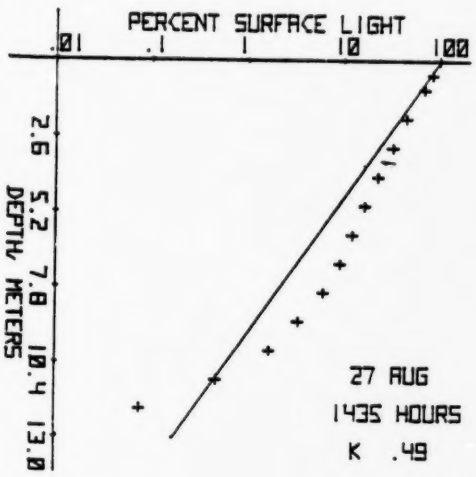

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.6
5.2
7.8
10.4
13.0
DEPTH, METERS
1 JUL
1610 HOURS
K .43

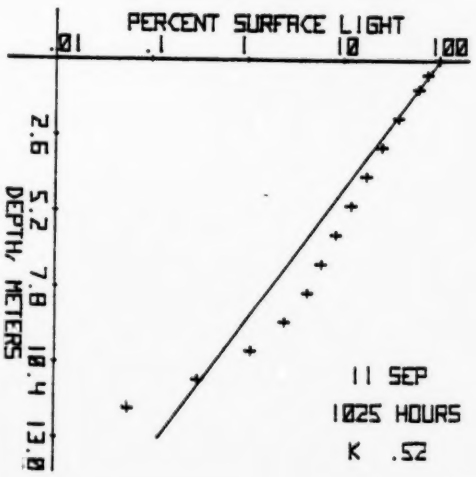
LAKE 223

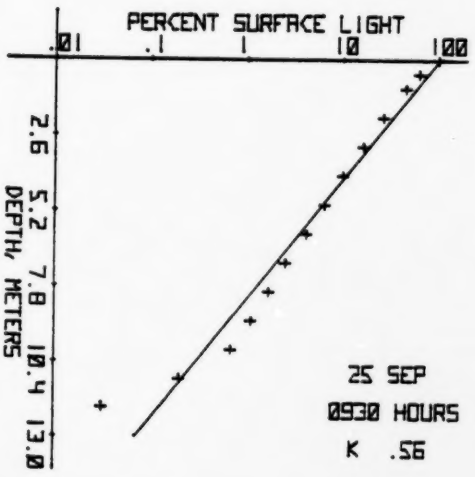

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.6
5.2
7.8
10.4
13.0
DEPTH, METERS
21 JUL
0825 HOURS
K .47


PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.6
5.2
7.8
10.4
13.0
DEPTH, METERS
4 AUG
0815 HOURS
K .42

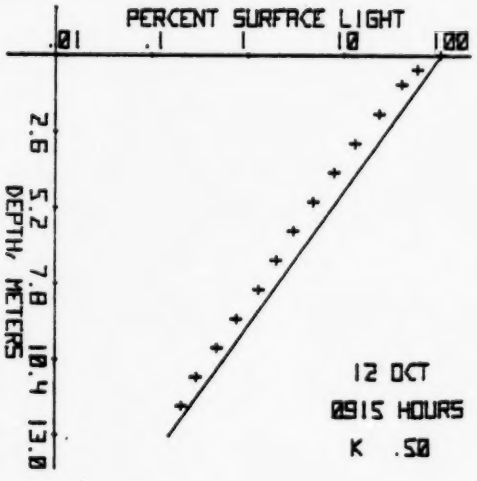

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.6
5.2
7.8
10.4
13.0
DEPTH, METERS
14 AUG
1030 HOURS
K .45


PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.6
5.2
7.8
10.4
13.0
DEPTH, METERS
27 AUG
1435 HOURS
K .49

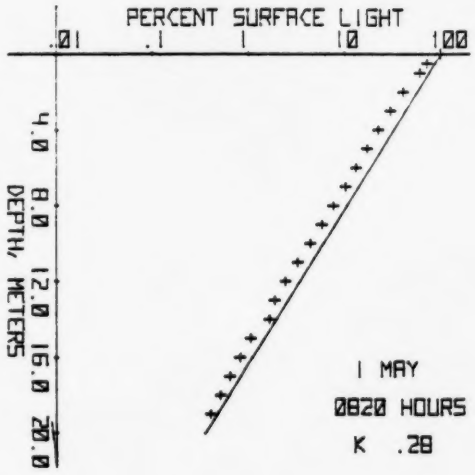

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.6
5.2
7.8
10.4
13.0
DEPTH, METERS
11 SEP
1025 HOURS
K .52

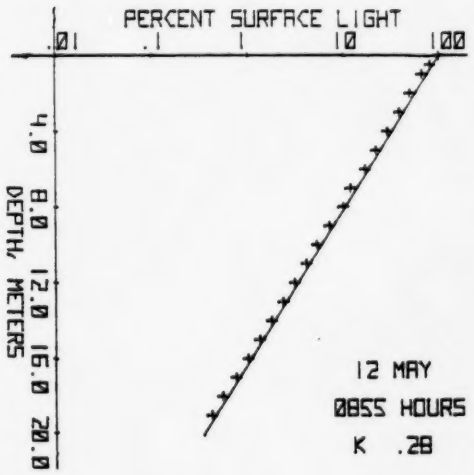

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.6
5.2
7.8
10.4
13.0
DEPTH, METERS
25 SEP
0930 HOURS
K .56

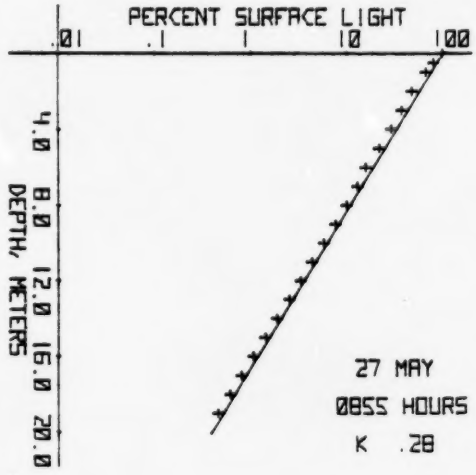
LAKE 223

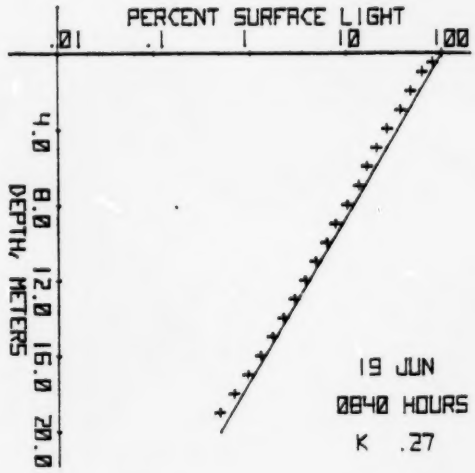

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.6
5.2
7.8
10.4
13.0
12 OCT
0915 HOURS
K .50

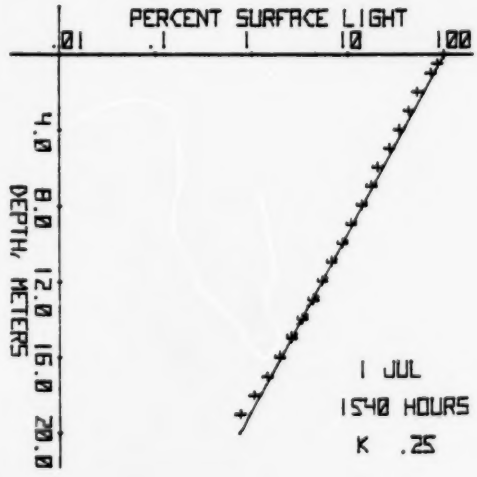
LAKE 224

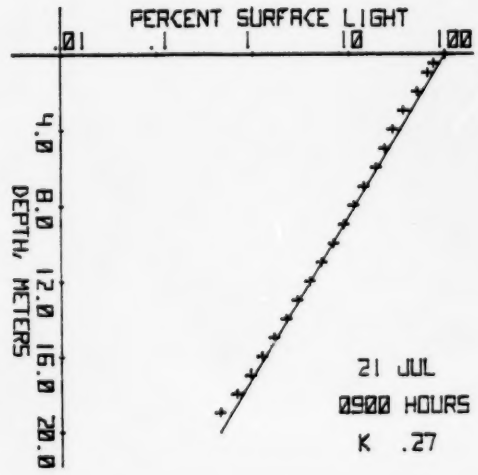

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
4.0
8.0
12.0
16.0
20.0
1 MAY
0820 HOURS
K .28


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
4.0
8.0
12.0
16.0
20.0
12 MAY
0855 HOURS
K .28

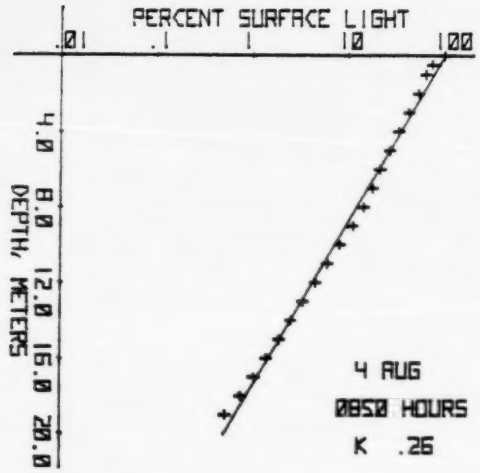

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
4.0
8.0
12.0
16.0
20.0
27 MAY
0855 HOURS
K .28

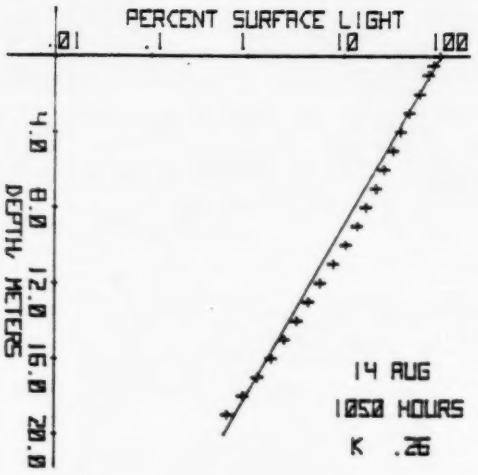

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
4.0
8.0
12.0
16.0
20.0
19 JUN
0840 HOURS
K .27

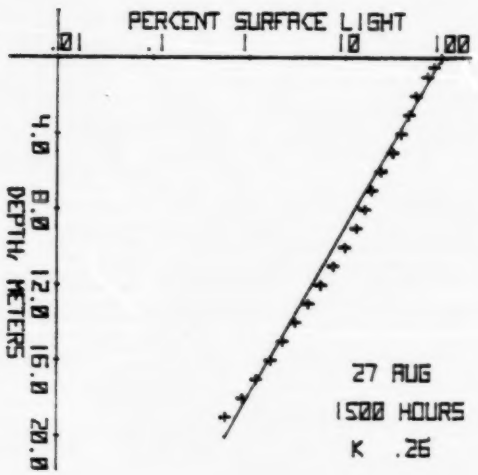

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
4.0
8.0
12.0
16.0
20.0
1 JUL
1540 HOURS
K .25

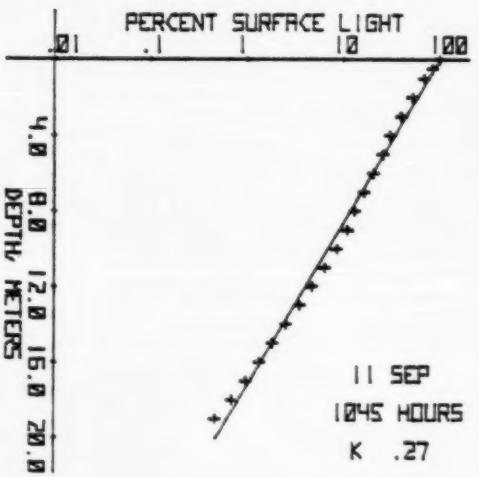

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
4.0
8.0
12.0
16.0
20.0
21 JUL
0900 HOURS
K .27

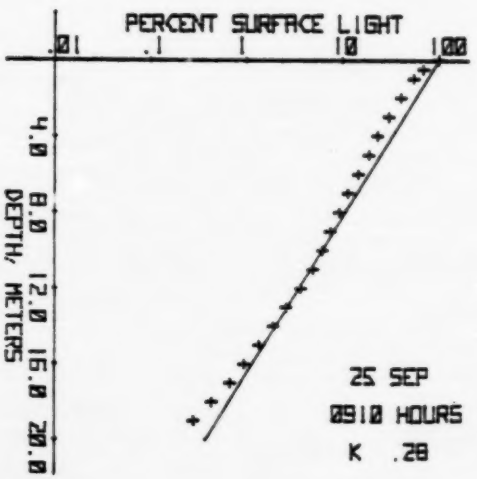
LAKE 224

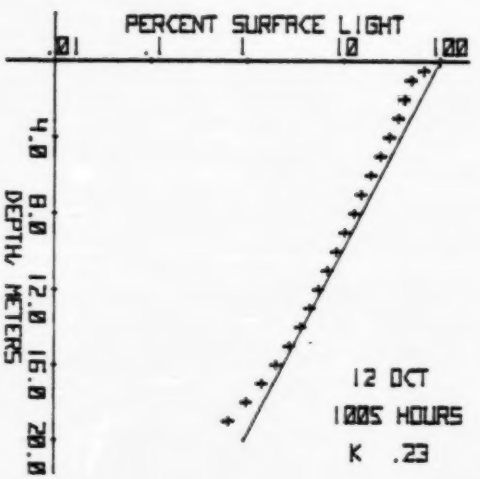

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
4.0
8.0
12.0
16.0
20.0
4 AUG
0850 HOURS
K .26


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
4.0
8.0
12.0
16.0
20.0
14 AUG
1050 HOURS
K .26

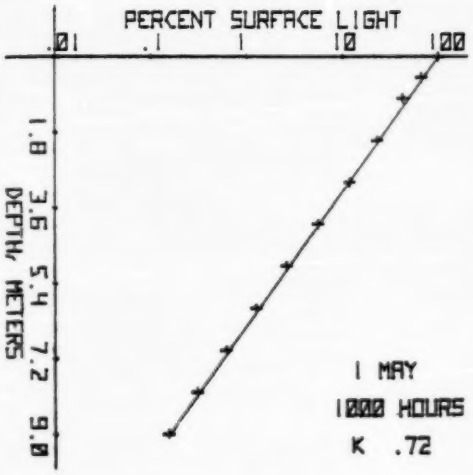

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
4.0
8.0
12.0
16.0
20.0
27 AUG
1500 HOURS
K .26

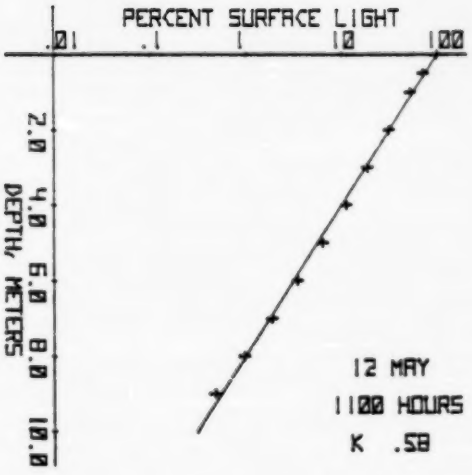

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
4.0
8.0
12.0
16.0
20.0
11 SEP
1045 HOURS
K .27

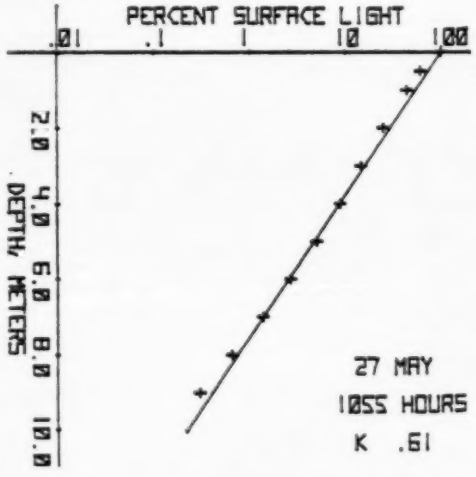

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
4.0
8.0
12.0
16.0
20.0
25 SEP
0910 HOURS
K .28

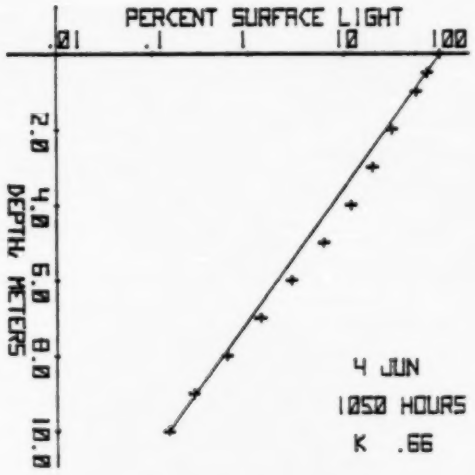

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
4.0
8.0
12.0
16.0
20.0
12 OCT
1005 HOURS
K .23

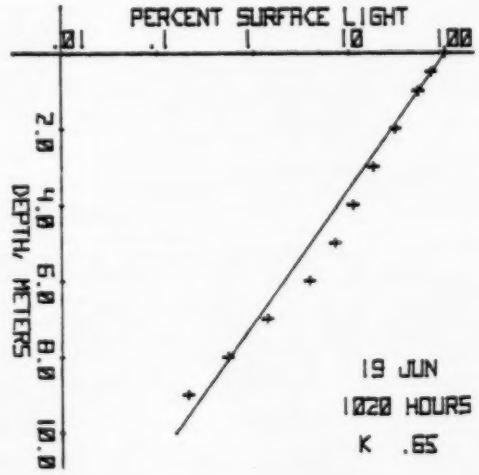
LAKE 22ENE

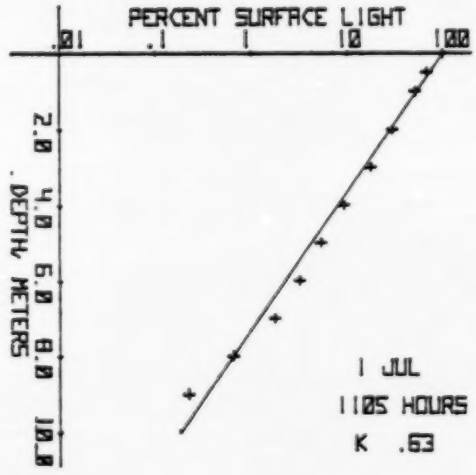

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
1.0
3.0
5.0
7.0
9.0
1 MAY
1000 HOURS
K .72


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.0
4.0
6.0
8.0
10.0
12 MAY
1100 HOURS
K .58

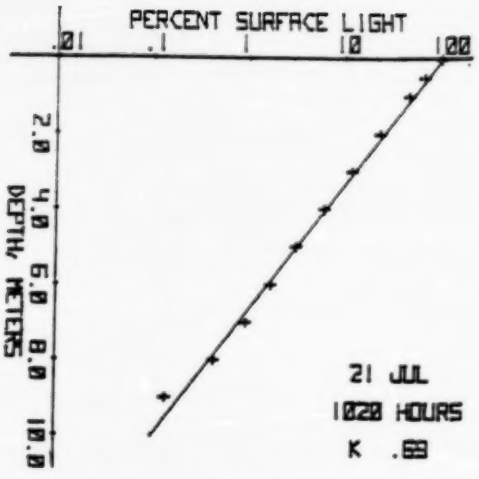

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.0
4.0
6.0
8.0
10.0
27 MAY
1055 HOURS
K .61

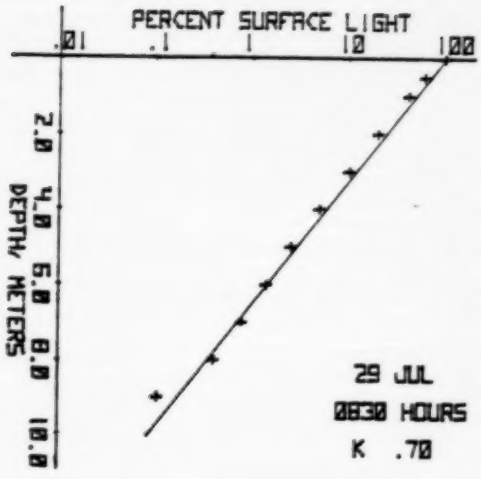

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.0
4.0
6.0
8.0
10.0
4 JUN
1050 HOURS
K .66

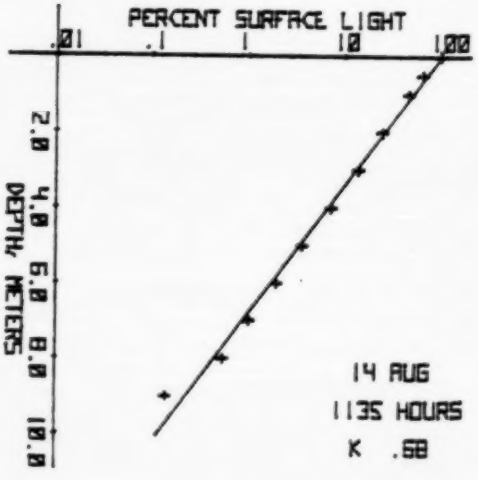

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.0
4.0
6.0
8.0
10.0
19 JUN
1020 HOURS
K .65

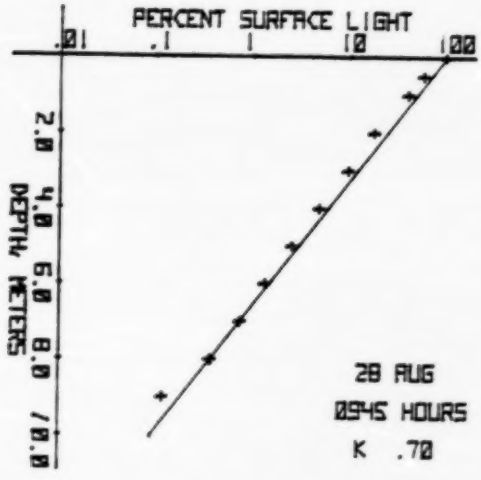

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.0
4.0
6.0
8.0
10.0
1 JUL
1105 HOURS
K .63

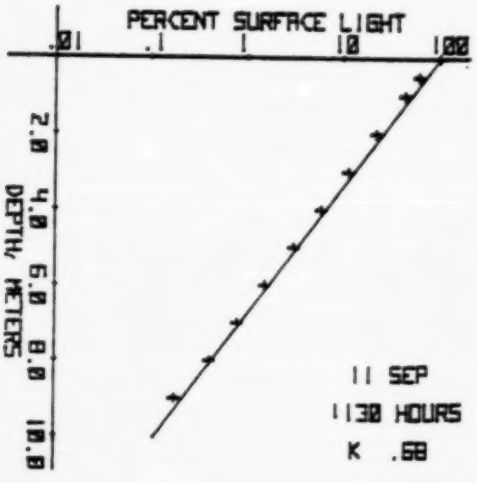
LAKE 225NE

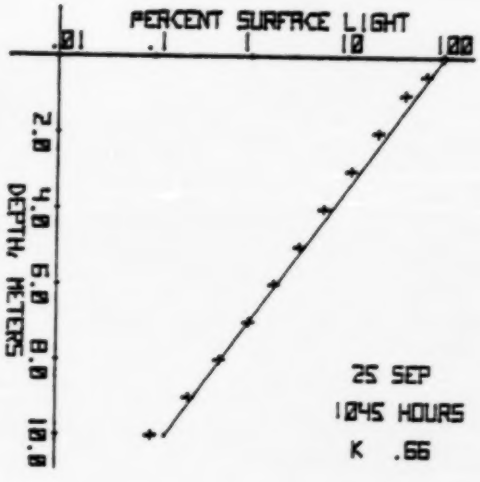

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.0
4.0
6.0
8.0
10.0
DEPTH METERS
21 JUL
1020 HOURS
K .69


PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.0
4.0
6.0
8.0
10.0
DEPTH METERS
29 JUL
0830 HOURS
K .70

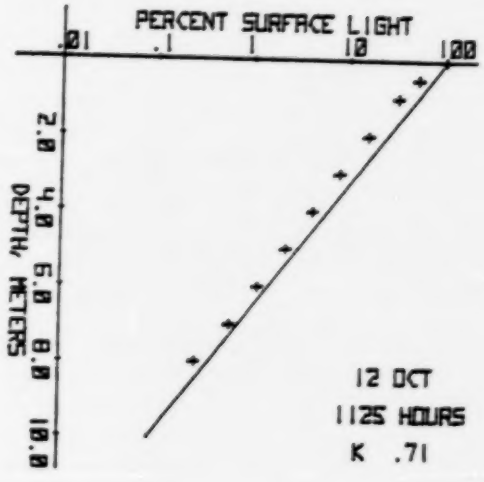

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.0
4.0
6.0
8.0
10.0
DEPTH METERS
14 AUG
1135 HOURS
K .68


PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.0
4.0
6.0
8.0
10.0
DEPTH METERS
28 AUG
0945 HOURS
K .70

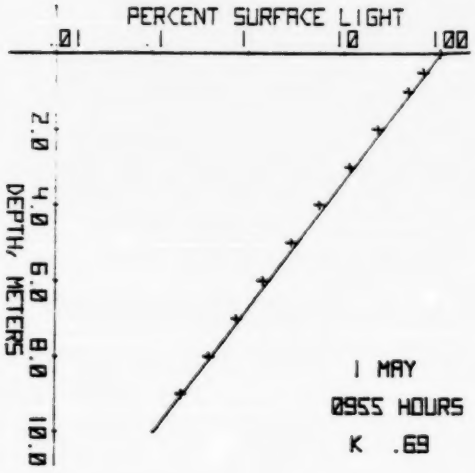

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.0
4.0
6.0
8.0
10.0
DEPTH METERS
11 SEP
1130 HOURS
K .68

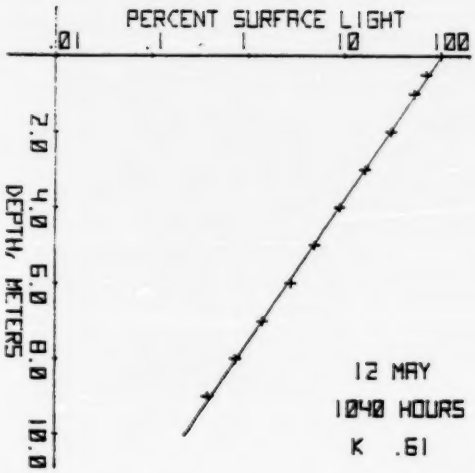

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.0
4.0
6.0
8.0
10.0
DEPTH METERS
25 SEP
1045 HOURS
K .66

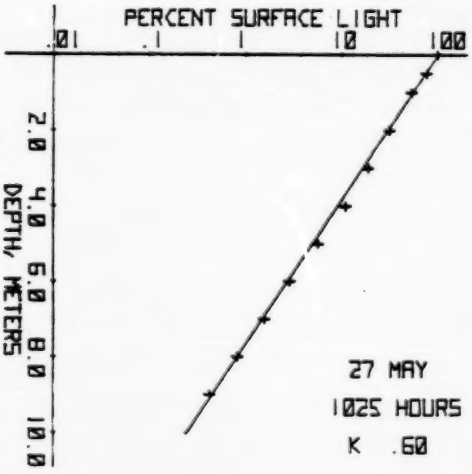
LAKE 226NE

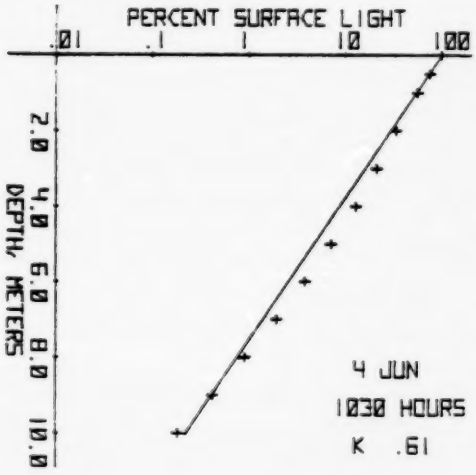

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
12 OCT
1125 HOURS
K .71

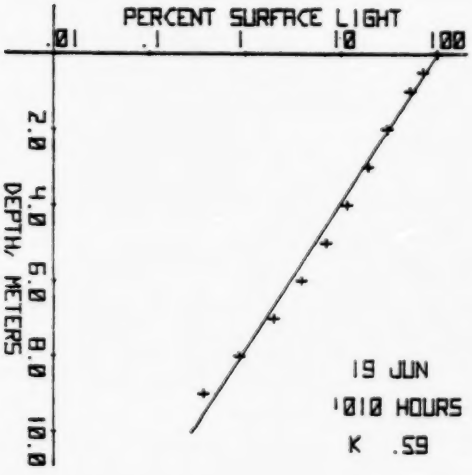
LAKE 2255W

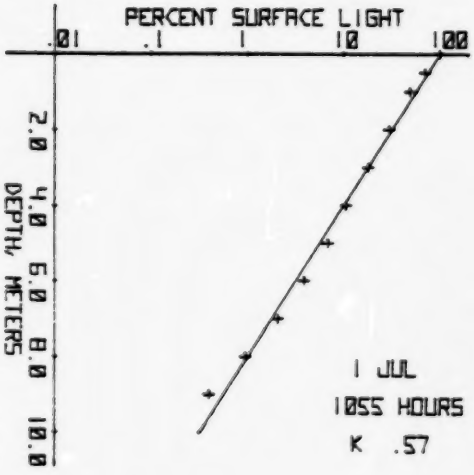

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
1 MAY
0955 HOURS
K .69


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
12 MAY
1040 HOURS
K .61

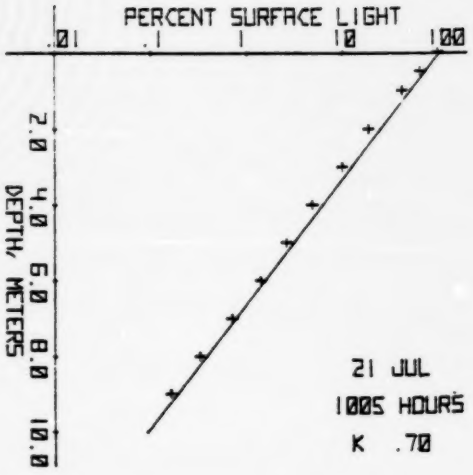

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
27 MAY
1025 HOURS
K .60

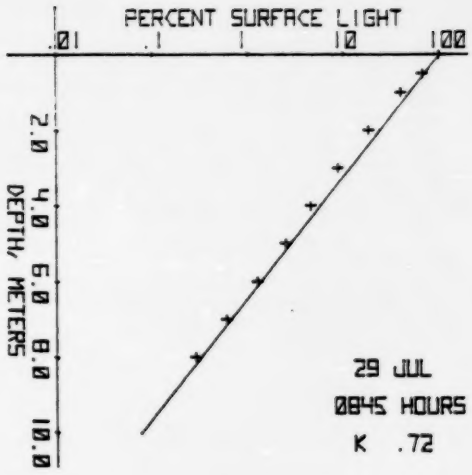

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
4 JUN
1030 HOURS
K .61

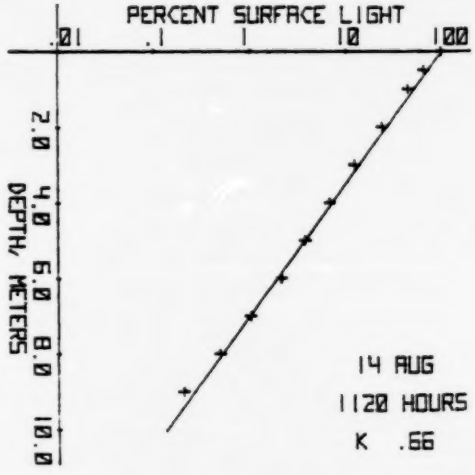

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
19 JUN
1010 HOURS
K .59

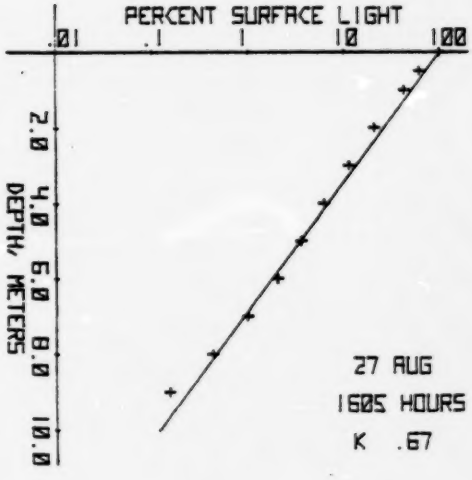

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
1 JUL
1055 HOURS
K .57

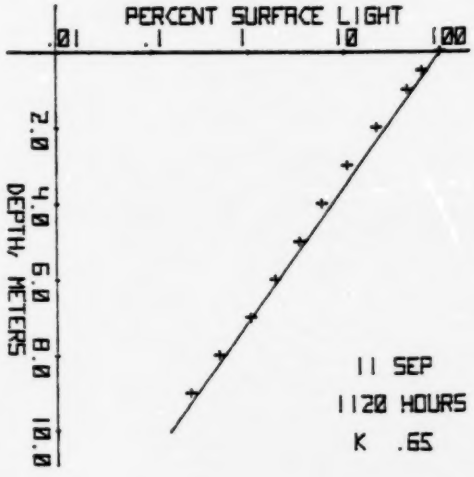
LAKE 2265W

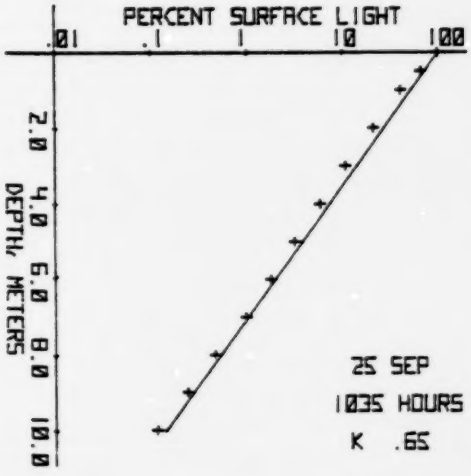

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.0
4.0
6.0
8.0
10.0
21 JUL
1005 HOURS
K .70


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.0
4.0
6.0
8.0
10.0
29 JUL
0845 HOURS
K .72

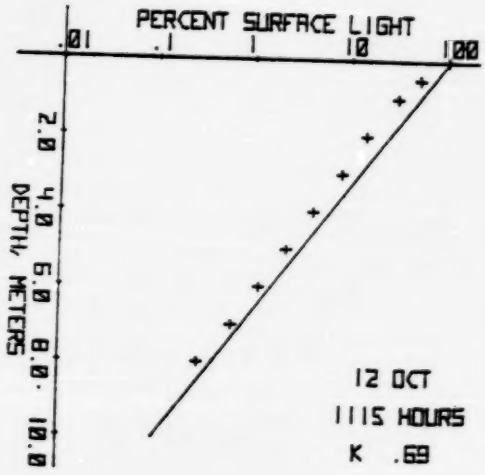

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.0
4.0
6.0
8.0
10.0
14 AUG
1120 HOURS
K .66


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.0
4.0
6.0
8.0
10.0
27 AUG
1605 HOURS
K .67

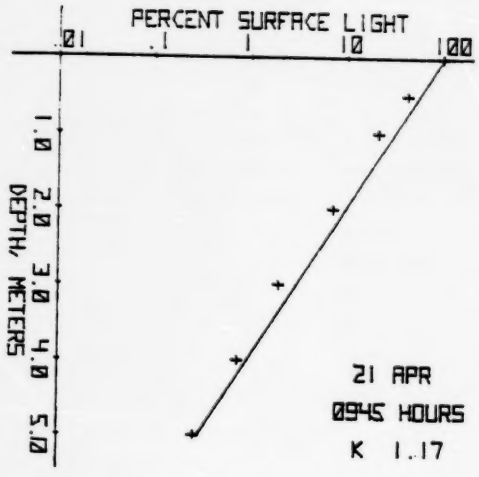

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.0
4.0
6.0
8.0
10.0
11 SEP
1120 HOURS
K .65

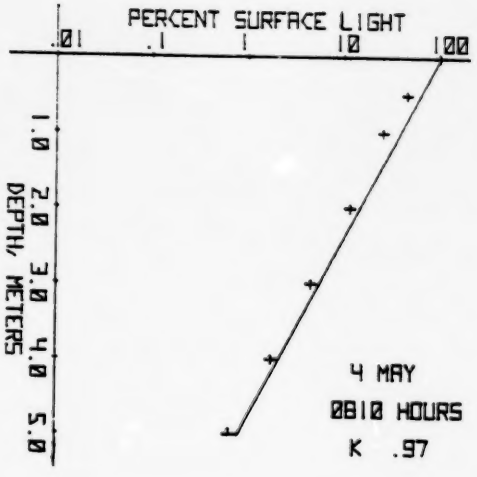

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.0
4.0
6.0
8.0
10.0
25 SEP
1035 HOURS
K .65

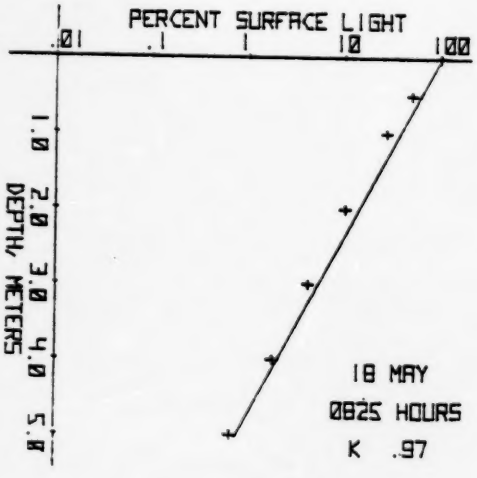
LAKE 2265W

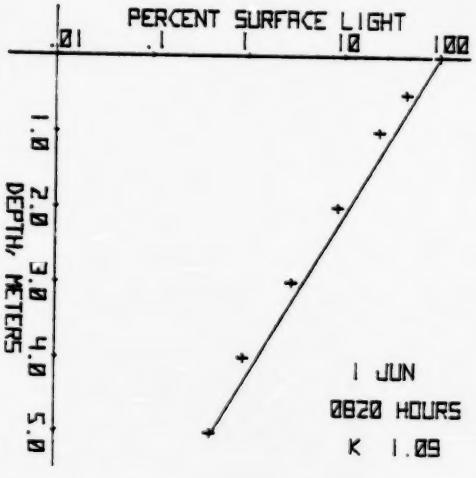

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
2.0
4.0
6.0
8.0
10.0
12 OCT
1115 HOURS
K .69

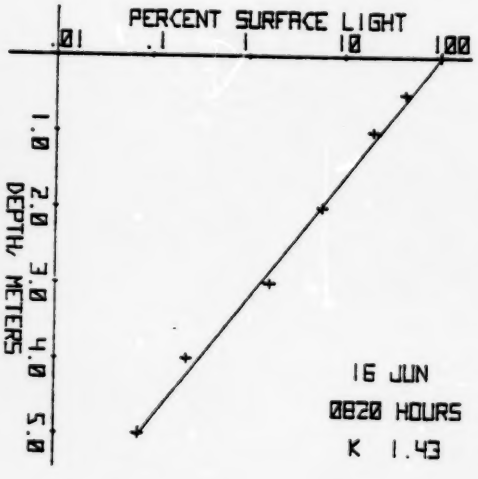
LAKE 227

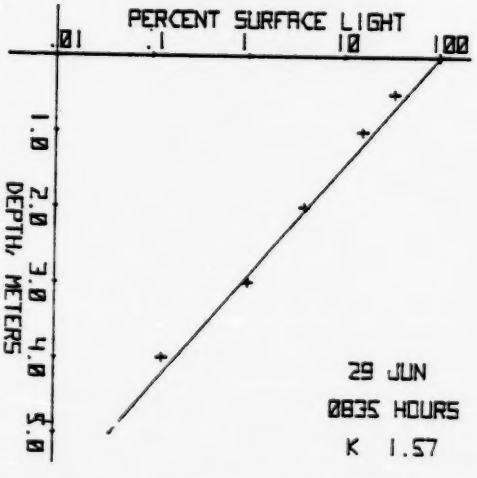

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.1
2.0
3.0
4.0
5.0
21 APR
0945 HOURS
K 1.17


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.1
2.0
3.0
4.0
5.0
4 MAY
0810 HOURS
K .97

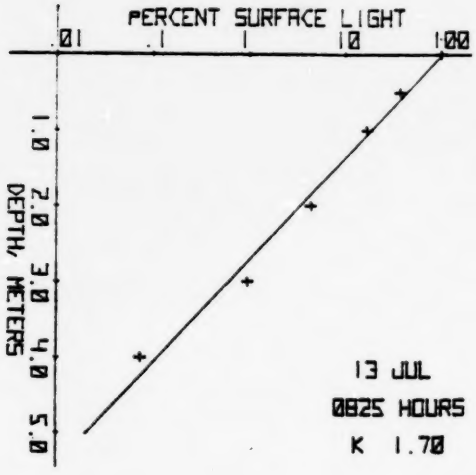

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.1
2.0
3.0
4.0
5.0
18 MAY
0825 HOURS
K .97

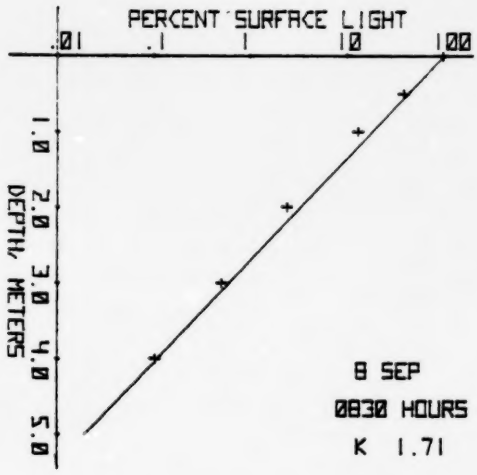

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.1
2.0
3.0
4.0
5.0
1 JUN
0820 HOURS
K 1.09

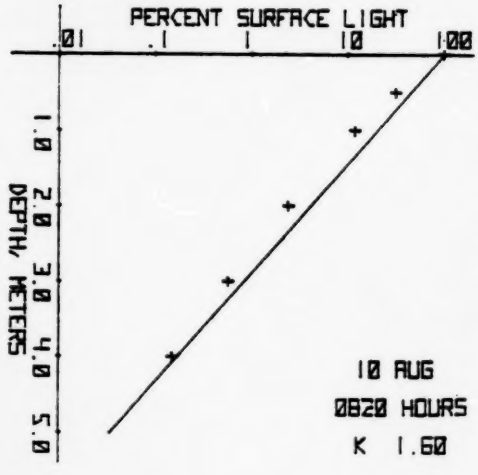

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.1
2.0
3.0
4.0
5.0
16 JUN
0820 HOURS
K 1.43

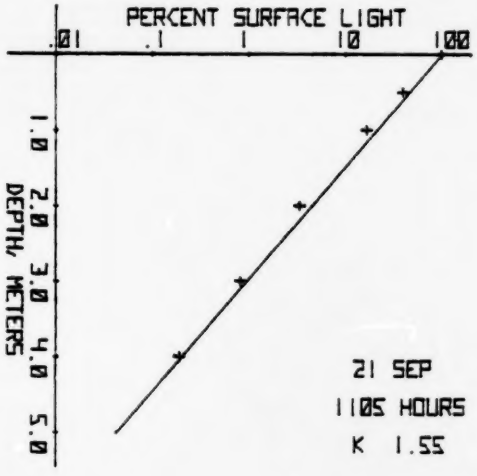

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.1
2.0
3.0
4.0
5.0
29 JUN
0835 HOURS
K 1.57

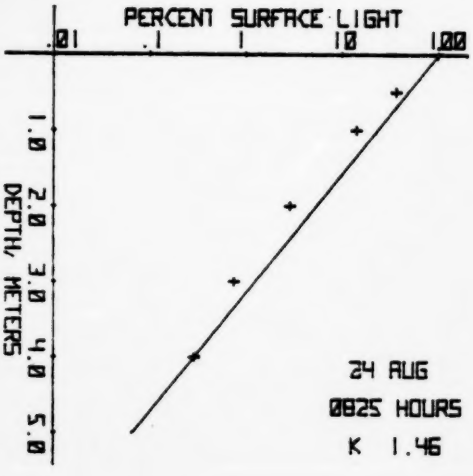
LAKE 227

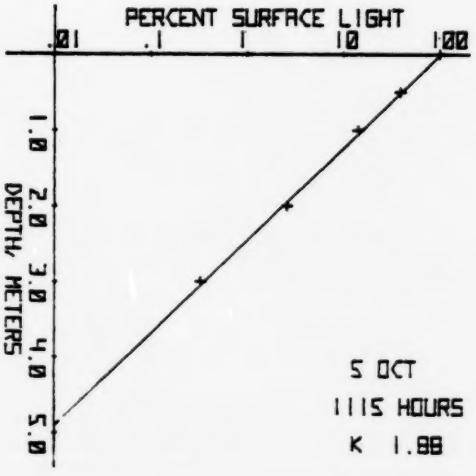

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
1.0
2.0
3.0
4.0
5.0
13 JUL
0825 HOURS
K 1.70


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
1.0
2.0
3.0
4.0
5.0
8 SEP
0830 HOURS
K 1.71

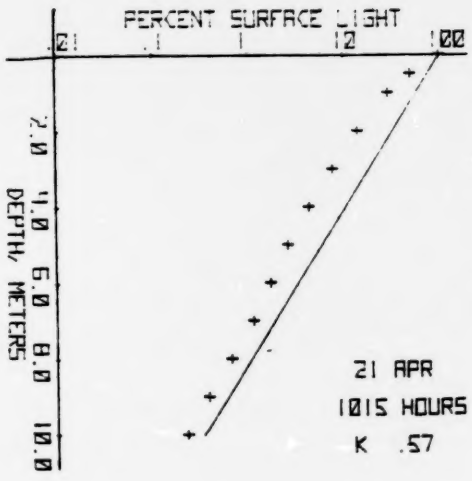

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
1.0
2.0
3.0
4.0
5.0
10 AUG
0820 HOURS
K 1.60

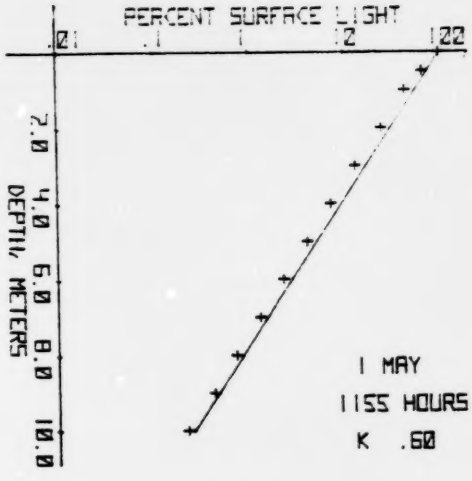

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
1.0
2.0
3.0
4.0
5.0
21 SEP
1105 HOURS
K 1.55

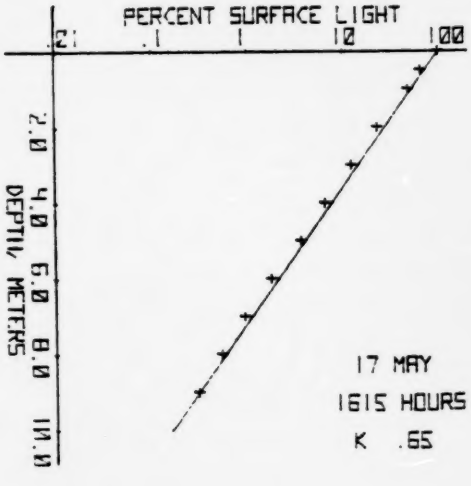

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
1.0
2.0
3.0
4.0
5.0
24 AUG
0825 HOURS
K 1.46

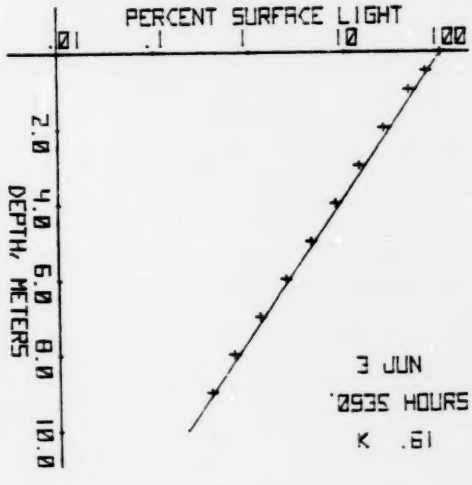

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
1.0
2.0
3.0
4.0
5.0
5 OCT
1115 HOURS
K 1.88

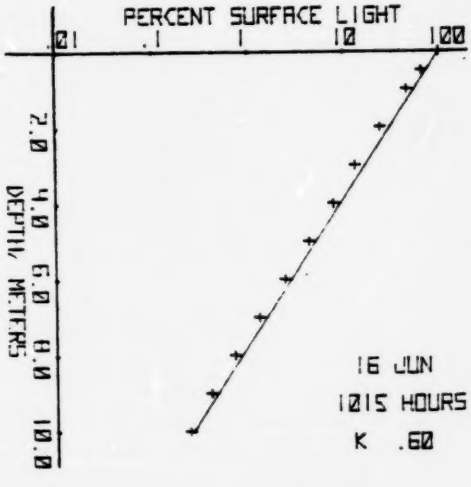
LAKE 239

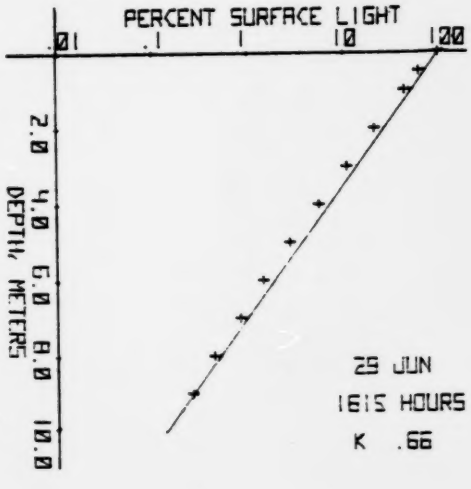

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
21 APR
1015 HOURS
K .57


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
1 MAY
1155 HOURS
K .60

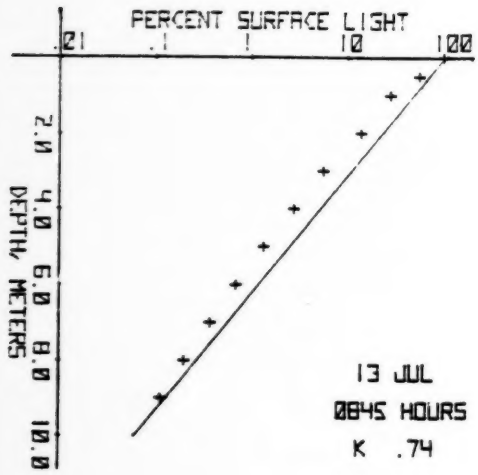

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
17 MAY
1615 HOURS
K .65

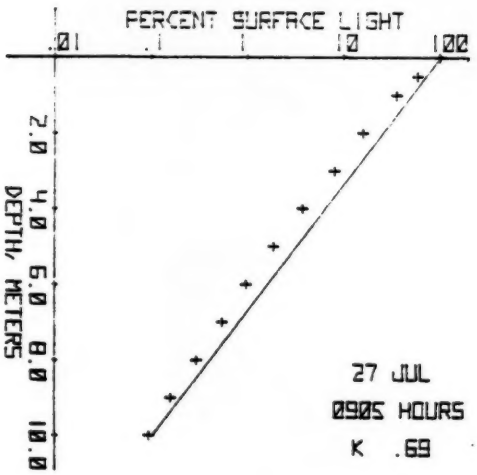

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
3 JUN
0935 HOURS
K .61

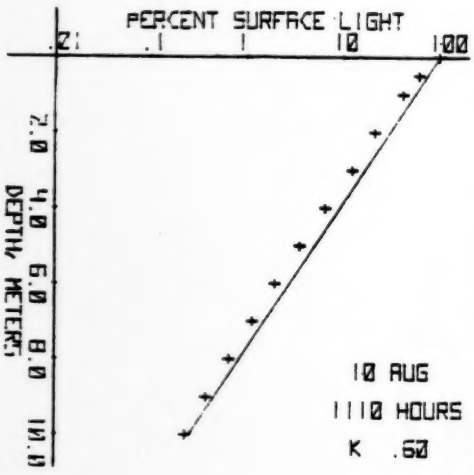

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
16 JUN
1015 HOURS
K .60

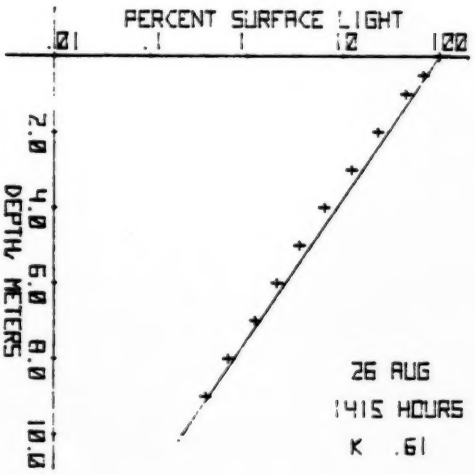

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
29 JUN
1615 HOURS
K .66

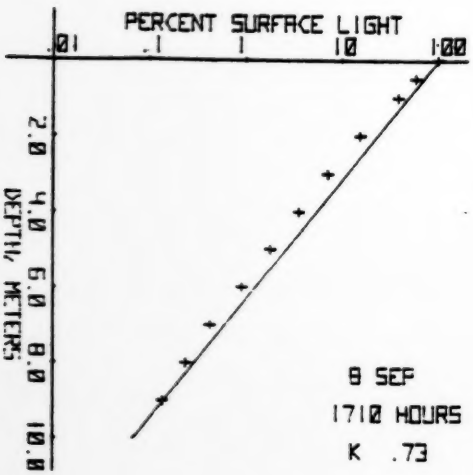
LAKE 235

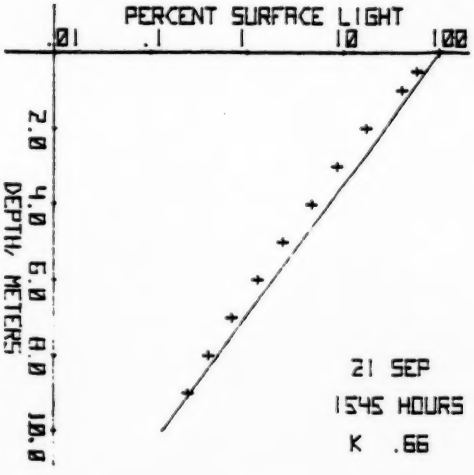

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
2.0
4.0
6.0
8.0
10.0
13 JUL
0845 HOURS
K .74


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
2.0
4.0
6.0
8.0
10.0
27 JUL
0905 HOURS
K .69

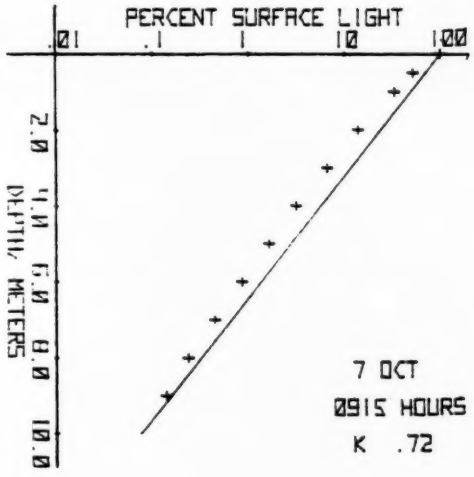

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
2.0
4.0
6.0
8.0
10.0
10 AUG
1110 HOURS
K .60

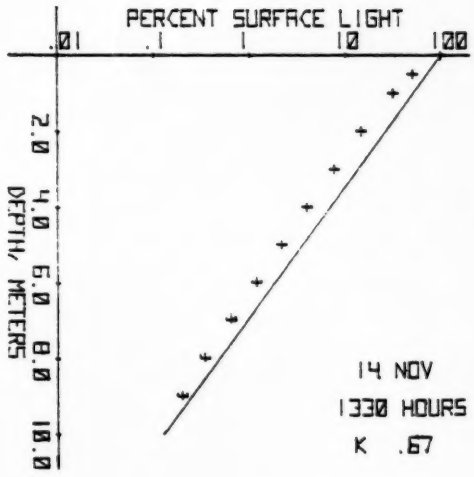

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
2.0
4.0
6.0
8.0
10.0
26 AUG
1415 HOURS
K .61


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
2.0
4.0
6.0
8.0
10.0
8 SEP
1710 HOURS
K .73

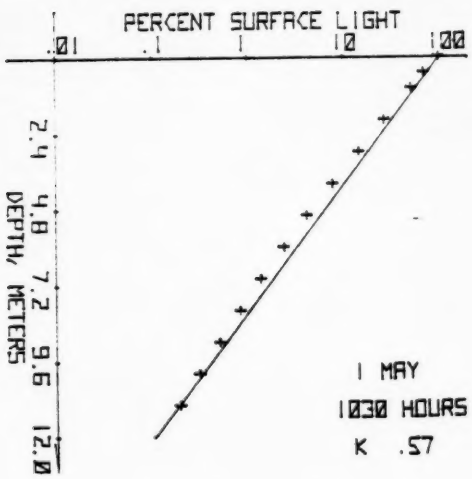

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
2.0
4.0
6.0
8.0
10.0
21 SEP
1545 HOURS
K .66

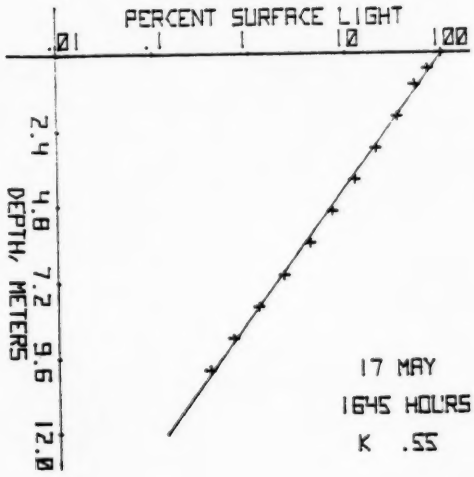
LAKE 239

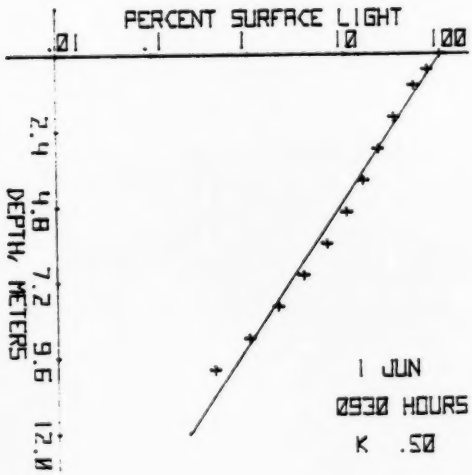

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
2.0
4.0
6.0
8.0
10.0
7 OCT
0915 HOURS
K .72

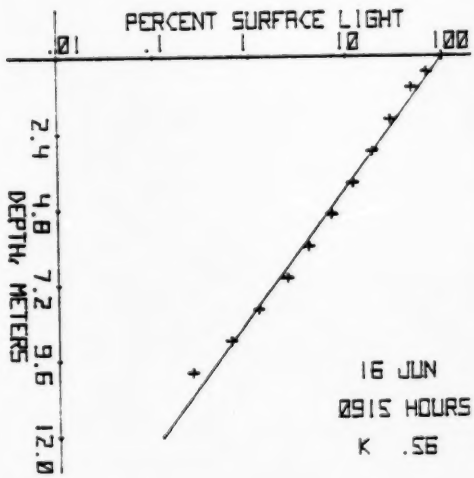

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
2.0
4.0
6.0
8.0
10.0
14 NOV
1330 HOURS
K .67

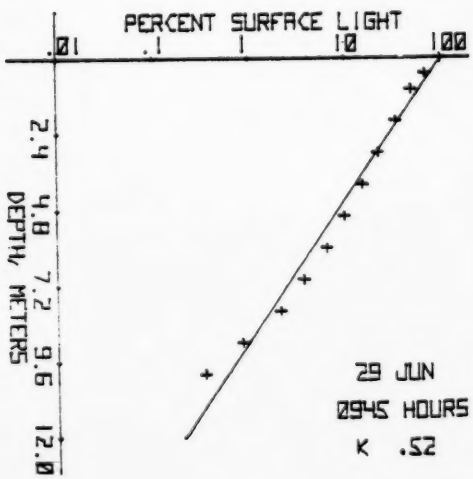
LAKE 3ZZN

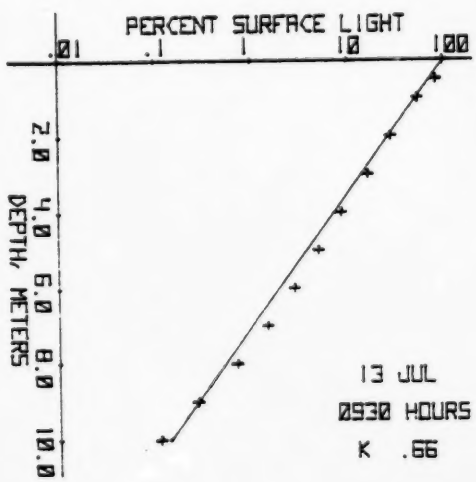

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.4
4.8
7.2
9.6
12.0
1 MAY
1030 HOURS
K .57


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.4
4.8
7.2
9.6
12.0
17 MAY
1645 HOURS
K .55

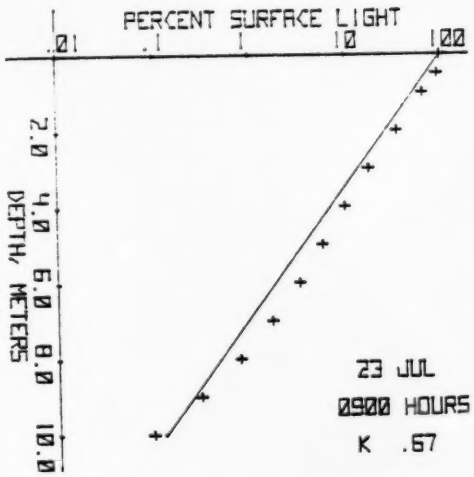

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.4
4.8
7.2
9.6
12.0
1 JUN
0930 HOURS
K .50

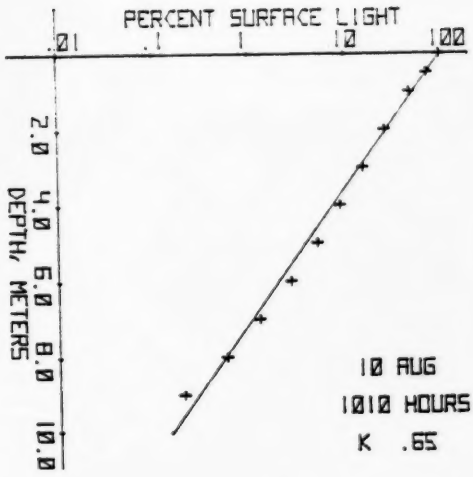

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.4
4.8
7.2
9.6
12.0
16 JUN
0915 HOURS
K .56

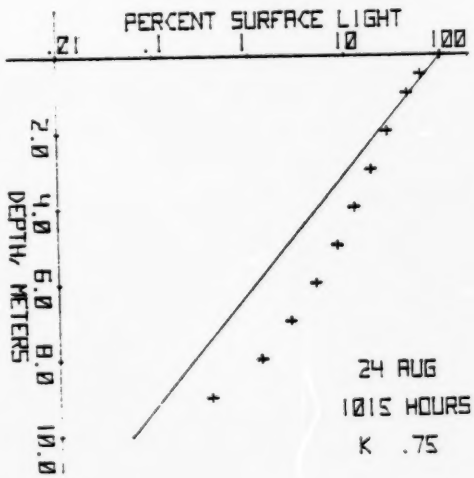

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.4
4.8
7.2
9.6
12.0
29 JUN
0945 HOURS
K .52

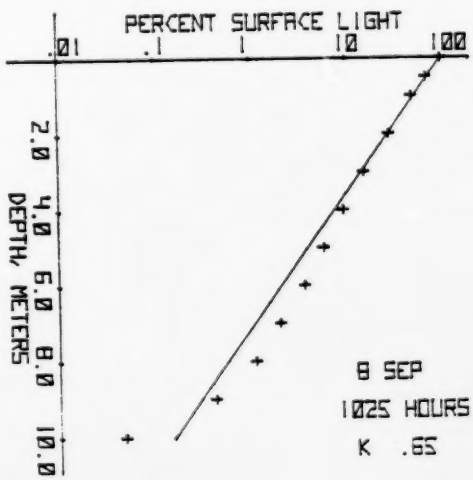

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
2.0
4.0
6.0
8.0
10.0
13 JUL
0930 HOURS
K .66

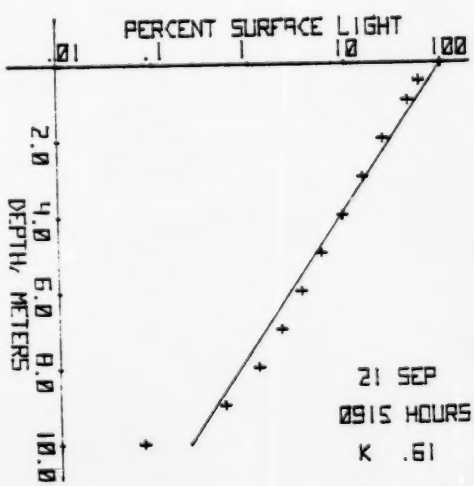
LAKE EDEN

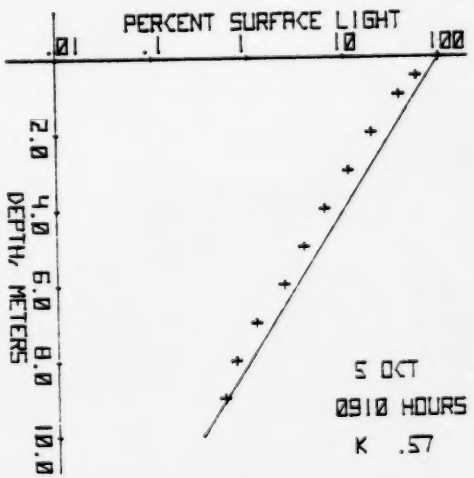

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.0
4.0
6.0
8.0
10.0
DEPTH, METERS
23 JUL
0900 HOURS
K .67


PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.0
4.0
6.0
8.0
10.0
DEPTH, METERS
10 AUG
1010 HOURS
K .65

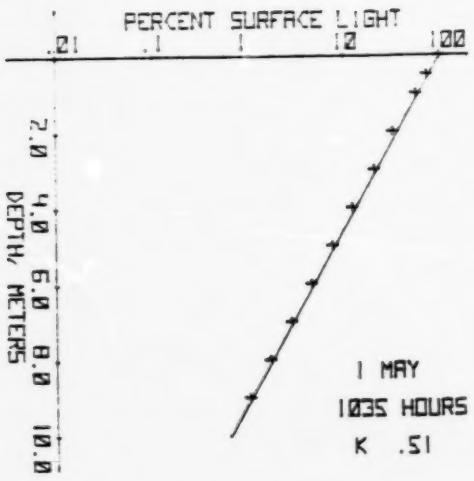

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.0
4.0
6.0
8.0
10.0
DEPTH, METERS
24 AUG
1015 HOURS
K .75

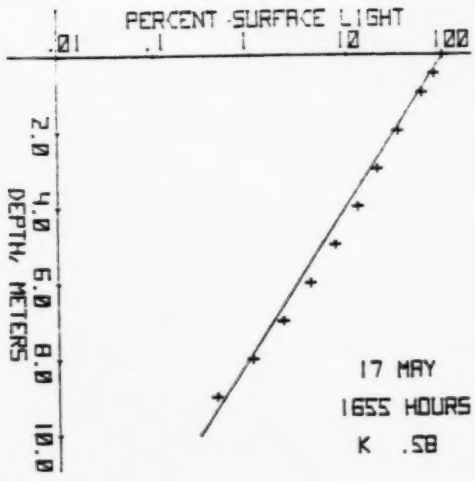

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.0
4.0
6.0
8.0
10.0
DEPTH, METERS
8 SEP
1025 HOURS
K .65

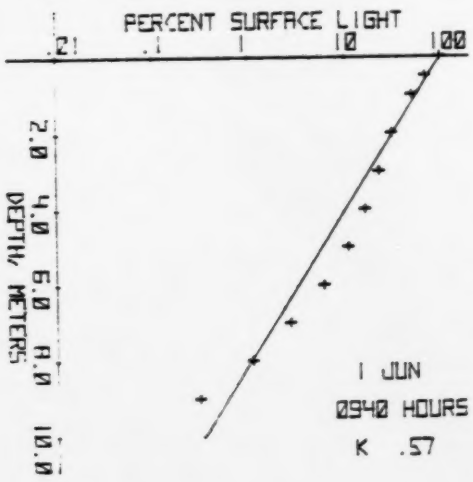

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.0
4.0
6.0
8.0
10.0
DEPTH, METERS
21 SEP
0915 HOURS
K .61

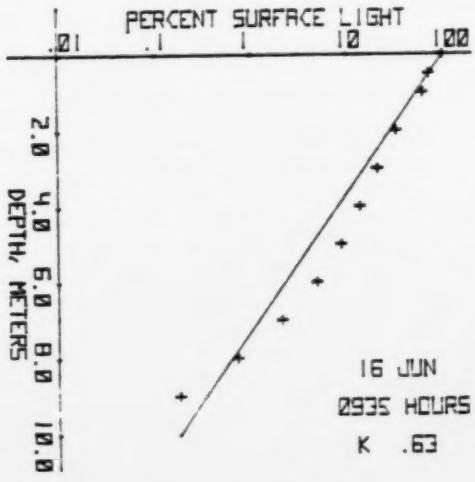

PERCENT SURFACE LIGHT
.01
.1
1
10
100
2.0
4.0
6.0
8.0
10.0
DEPTH, METERS
5 OCT
0910 HOURS
K .57

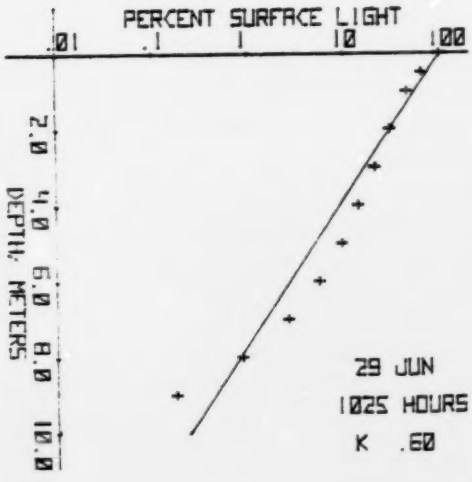
LAKE 3025

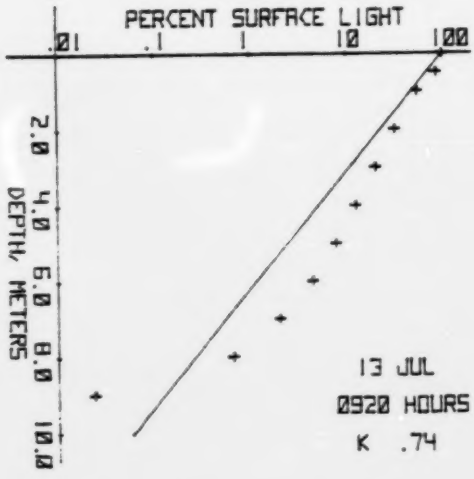

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
1 MAY
1035 HOURS
K .51


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
17 MAY
1655 HOURS
K .58

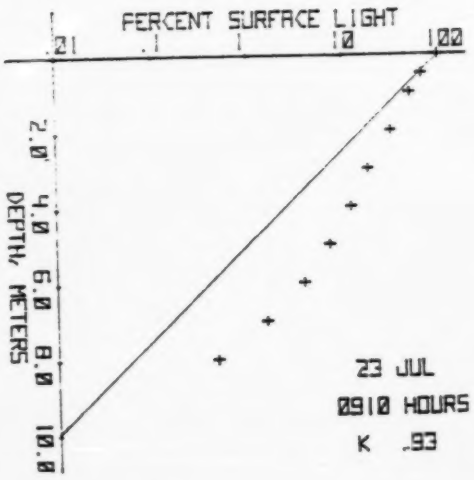

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
1 JUN
0940 HOURS
K .57

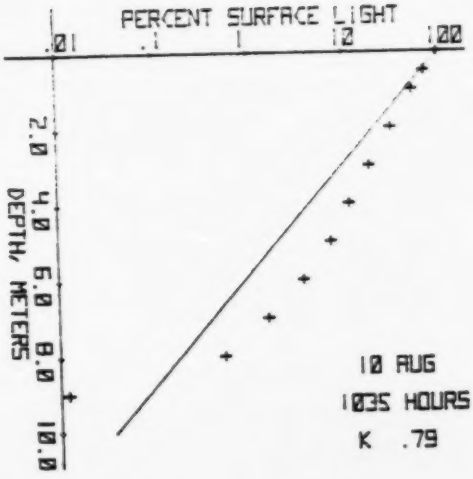

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
16 JUN
0935 HOURS
K .63

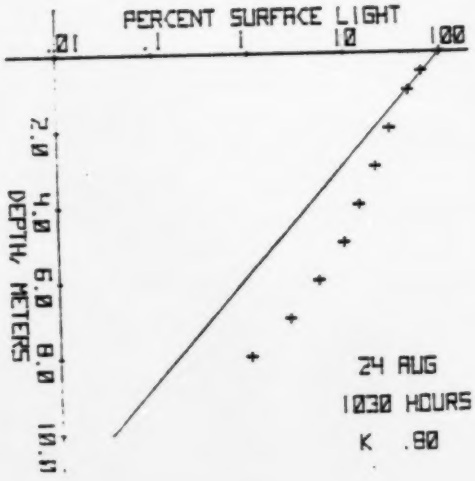

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
29 JUN
1025 HOURS
K .60

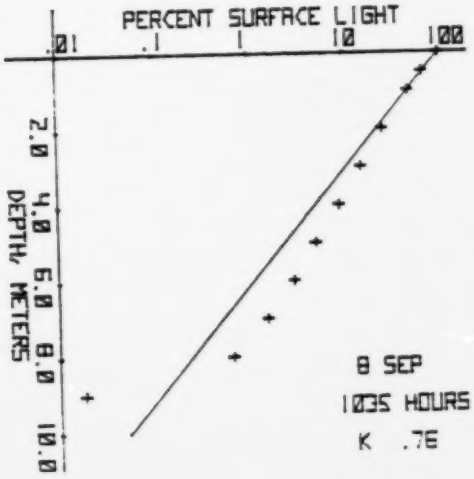

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
13 JUL
0920 HOURS
K .74

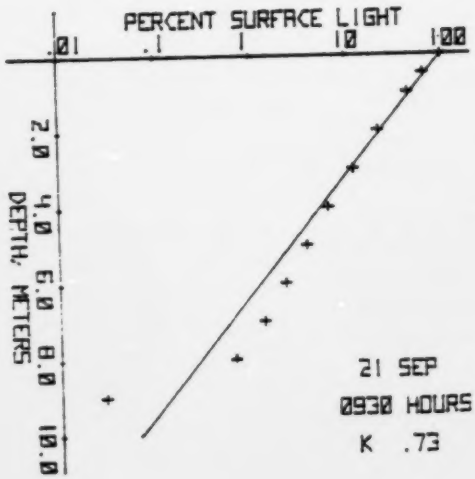
LAKE 3023

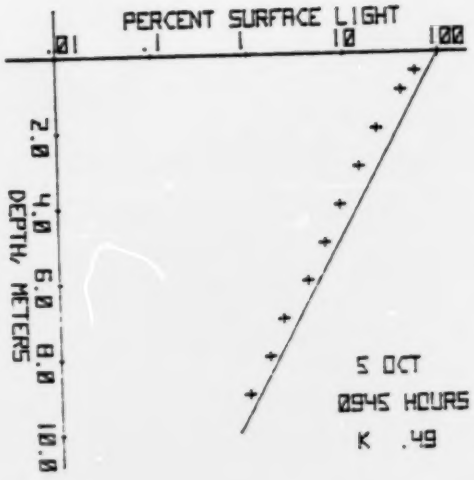

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
23 JUL
0910 HOURS
K .93


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
10 AUG
1035 HOURS
K .79

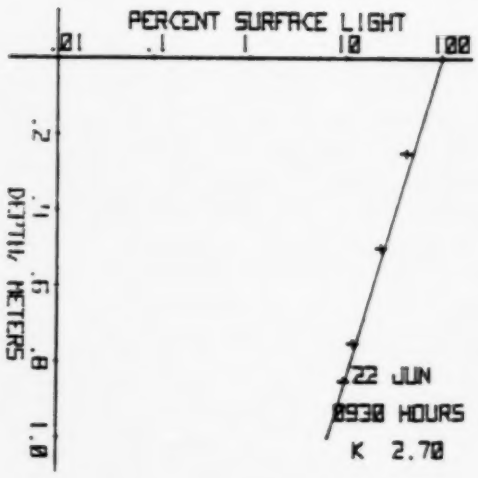

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
24 AUG
1030 HOURS
K .80

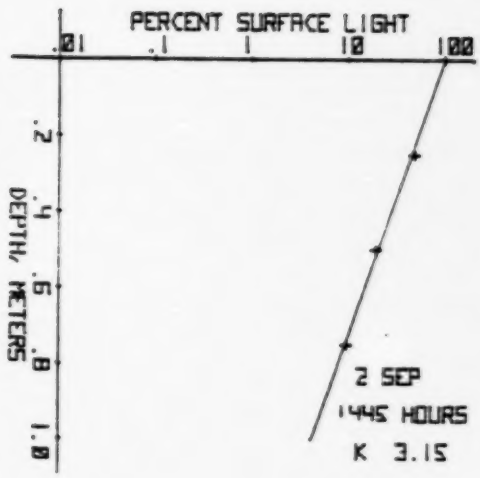

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
8 SEP
1035 HOURS
K .76


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
21 SEP
0930 HOURS
K .73

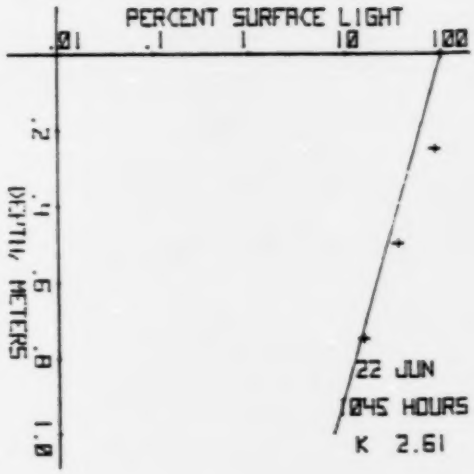

PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
0.0
2.0
4.0
6.0
8.0
10.0
5 OCT
0945 HOURS
K .49

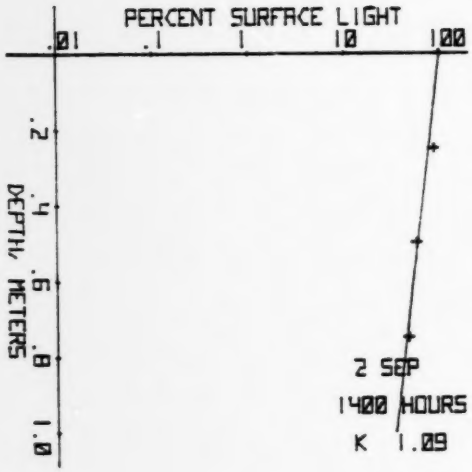
LAKE 661


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
.2
.4
.6
.8
1.0
22 JUN
0930 HOURS
K 2.70


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH, METERS
.2
.4
.6
.8
1.0
2 SEP
1445 HOURS
K 3.15

LAKE 979


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
.2
.4
.6
.8
1.0
22 JUN
1045 HOURS
K 2.61


PERCENT SURFACE LIGHT
.01
.1
1
10
100
DEPTH METERS
.2
.4
.6
.8
1.0
2 SEP
1400 HOURS
K 1.09

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